

National Health Expenditures:

Short-Term Outlook and Long-Term Projections

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This paper presents projections of national health expenditures by type of expenditure and source of funds for 1981, 1985, and 1990. Rapid growth in national health expenditures is projected to continue through 1990. National health expenditures increased 400 percent between 1965 and 1979, reaching \$212 billion in 1979.

As a proportion of the Gross National Product (GNP), health expenditures rose from 6.1 percent to 9.0 percent between 1965 and 1979. They are expected to continue to rise, reaching 10.8 percent by 1990. This study projects that, under current legislation, national health expenditures will reach \$279 billion in 1981, \$462 billion in 1985, and \$821 billion in 1990.

Sources of payments for these expenditures are shifting. From 1965 to 1979, the percentage of total health expenditures financed by public funds increased 17 percentage points—from 26 to 43 percent. The Federal share of public funds during this same period grew rapidly, from 51 percent in 1965 to 67 percent in 1979. This study projects that in 1985 approximately 45 percent of total health spending will be financed from public funds, of which 68 percent will be paid for by the Federal government. Public funds will account for 46 percent of total national health expenditures by 1990.

National health expenditures grew at an average annual rate of 12.3 percent from 1965 to 1979, compared to a 9.2 percent growth rate for the GNP (Table 1). As health expenditures continue to consume a greater proportion of the GNP, national attention is focusing on finding ways to slow this growth. Strategies advanced to slow the rate of increase of health care expenditures include: pro-competition approaches, cost containment, area-wide budgeting, and voluntary efforts by the health care industry.

The projection model outlined in this paper provides a framework which includes economic, actuarial, demographic, and judgmental factors. We developed a relatively simple and intuitive model, which is not econometric, to project trends and relationships for each type of expenditure such as: hospital care, physicians' services, and nursing home care; and for the sources of payment for these expenditures (for example, out-of-pocket expenses, the Federal government, and State and local governments) (Gibson, 1980).

Projection Assumptions

We based these projections on a set of assumptions relating to the medical care sector and to the economy

as a whole. The fundamental assumption is that historical trends and relationships will continue into the future, (which includes 1980, as complete information is not yet available for that year). Further, it is assumed that:

- The health care delivery system will continue to evolve along patterns followed during the historical period (1965 through 1979).
- No Federal mandatory cost containment program will be in effect.
- No major, new, publicly-financed program of medical care, such as national health insurance, will be introduced.
- No major technological breakthrough in treatment of acute and chronic illnesses will occur that would significantly alter evolving patterns of morbidity and mortality.
- Use of medical care, including intensity of services per case, will continue to grow in accordance with historical relationships and trends.
- Medical care prices will vary with the implicit price deflator for the GNP, according to relationships established in the period studied.
- Population will grow as projected by the Office of the Actuary, Social Security Administration (Table 1 and Table 2).

TABLE 1
Historical Estimates and Projections of Gross National Product, Real Gross National Product, Inflation,
and Population, Selected Years, 1929-1990

Calendar Year	Gross National Product (billions)	Real Gross National Product ¹ (1972 dollars) (billions)	Implicit Price Deflator, ¹ Gross National Product (1972 = 100.00)	Consumer Price Index ² —All Items, Wage Earners (1967 = 100.00)	Total Population ³ (Thousands, July 1)
Historical Estimates					
1929	\$103.4	\$314.6	32.9	51.3	123,731
1940	100.0	343.3	29.1	42.0	134,591
1950	286.2	533.5	53.6	72.1	154,675
1955	399.3	654.8	61.0	80.2	168,385
1960	506.0	736.8	68.7	88.7	183,831
1965	688.1	925.9	74.3	94.5	197,784
1966	753.0	981.0	76.8	97.2	200,059
1967	796.3	1,007.7	79.0	100.0	202,243
1968	868.5	1,051.8	82.6	104.2	204,273
1969	935.5	1,078.8	86.7	109.8	206,281
1970	982.4	1,075.3	91.4	116.3	208,402
1971	1,063.4	1,107.5	96.0	121.3	210,546
1972	1,171.1	1,171.1	100.0	125.3	212,338
1973	1,306.6	1,235.0	105.8	133.1	213,941
1974	1,412.9	1,217.8	116.0	147.7	215,696
1975	1,528.8	1,202.3	127.2	161.2	217,452
1976	1,702.2	1,273.0	133.7	170.5	219,318
1977	1,899.5	1,340.5	141.7	181.5	221,104
1978	2,127.6	1,399.3	152.1	195.4	223,107
1979	2,368.8	1,431.6	165.5	217.7	225,041
Projections					
1981	2,864.3	1,432.7	200.0	272.7	229,110
1985	4,653.2	1,686.5	276.0	376.6	237,470
1990	7,588.7	1,970.0	385.2	525.8	248,104

(Continued)

TABLE 1 (Continued)
Historical Estimates and Projections of Gross National Product, Real Gross National Product, Inflation, and Population, Selected Years, 1929-1990

Calendar Year	Gross National Product (billions)	Real Gross National Product (1972 dollars) (billions)	Implicit Price Deflator, ¹ Gross National Product (1972 = 100.00)	Consumer Price Index ² —All Items, Wage Earners (1967 = 100.00)	Total Population ³ (Thousands, July 1)
Average Annual Percent Increases for Selected Periods					
1950-55	6.9%	4.2%	2.6%	2.2%	1.7%
1955-60	4.9	2.4	2.4	2.0	1.8
1960-65	6.3	4.7	1.6	1.3	1.5
1965-70	7.4	3.0	4.2	4.3	1.1
1970-75	9.2	2.3	6.8	6.8	0.9
1975-79	11.6	4.5	6.8	7.8	0.9
1979-81	10.0	0.0	9.9	11.9	0.9
1981-85	12.9	4.2	8.4	8.4	0.9
1985-90	10.3	3.2	6.9	6.9	0.9
1965-79	9.2	3.2	5.9	6.1	0.9
1969-79	9.7	2.9	6.7	7.1	0.9
1979-85	11.9	2.8	8.9	9.6	0.9
1979-90 ⁴	11.2	2.9	8.0	8.3	0.9

¹Historical estimates are reported in *Economic Report of the President*, January 1980. Projections are from the Board of Trustees, Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds, *1980 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds*, June 17, 1980. Alternative II (intermediate) economic assumptions were used.

² The CPI is shown for comparison only. The implicit price deflator for GNP is used in the projection process to reflect cost pressures external to the health care industry.

³ Historical estimates of population are based on data for the Bureau of Census. Data for some years are unpublished. The estimates are reported in Robert M. Gibson, "National Health

Expenditures, 1979," *Health Care Financing Review*, Summer 1980, p. 16. Projected growth rates in population are from Office of the Actuary, Social Security Administration, *United States Population Projections for OASDI Cost Estimates 1980*, Actuarial Study No. 82, U.S. Department of Health and Human Services, June 1980. Alternative II (intermediate) assumptions for population growth were used.

⁴ Similar rates of growth in prices and the GNP have been projected by private consulting firms. For example, Data Resources, Inc. has projected that the GNP deflator will rise at an average annual rate of 8.3 percent and GNP will rise at an average annual rate of 11.0 percent between 1979 and 1990. See Data Resources, Inc. *U.S. Long-Term Review*, Fall 1980 (Forecast TRENDRONG2005).

Table 2
Proportions of the Total Population Aged 65+ and 75+,
Selected Years, 1960-1990¹

Year	Proportion Aged 65+	Proportion Aged 75+
Historical		
1960	9.1%	3.1%
1965	9.3	3.4
1970	9.7	3.8
1975	10.4	4.1
1979	11.0	4.3
Projections		
1981	11.3	4.5
1985	11.9	4.9
1990	12.6	5.4

¹ Office of the Actuary, Social Security Administration, *United States Population Projections for OASDI Cost Estimates, 1980*, Actuarial Study No. 82, U.S. Department of Health and Human Services, June 1980. Alternative II (intermediate) assumptions for population growth were used.

- Health manpower will increase as projected by the Bureau of Health Professions (Table 3).
- The implicit price deflator for the Gross National Product and the GNP will grow as projected in Alternative II (intermediate) economic assumptions incorporated in the *1980 Annual Report of the Board of Trustees of the Federal Old Age and Survivors Insurance and Disability Insurance Trust Funds* (Table 1).
- Benefit outlays for Medicare and total community hospital inpatient expenses will grow as projected in the *1980 Annual Report of the Board of Trustees of the Federal Hospital Insurance Trust Fund* and the *1980 Annual Report of the Federal Supplementary Medical Insurance Trust Fund*. (See Technical Note comment on community hospital inpatient care.)

It is difficult to project how a regulated sector¹ such as the health care industry will evolve during a decade when competing forces are, at the same time, tending toward both deregulation and increased regulation and planning (*American Medical News*, 1980).

The projection assumptions relate to only one scenario, the evolution of current trends and relationships.

¹Examples include the National Health Planning and Resources Development Act of 1974 (P.L. 93-641), Medicare and Medicaid regulations, and State regulations pertaining to rate-setting, medical licensure and advertising.

Projections could also be made for alternative scenarios, such as the effects of: significant deregulation of the health care industry; the advent of national health insurance (Trapnell, 1976); cost containment; and area-wide budgeting. However, a reasonable and useful baseline assumption is that historical trends and relationships will continue. The rationale for this assumption is developed later in this paper.

This baseline projection is given, instead of a range of projections, for two reasons. First, a range of projections can be difficult to present in a manner that is not confusing. Second, a range of projections could imply that the projections are less subject to error than they really are, by suggesting that actual expenditures will be within the range. A baseline projection does not imply precision. Inherent difficulties in making short run forecasts and long-term projections of national health expenditures should not be underestimated.

Methodology

The projection model uses as givens the projections included in the 1980 Board of Trustees Federal Insurance Funds report (population, implicit price deflator for GNP, Gross National Product, Medicare outlays by type of service and community hospital inpatient expenses and use). In addition, we took the health manpower projections made by the Bureau of Health Professions (Health Resources Administration) as givens and incorporated them into our projections of national health expenditures. We developed all other assumptions and projections based on historical time-series data and on special condition assumptions applicable for particular sectors of the health care industry.

The projection model has three components: (1) a five-factor module for specific types of expenditures² which reflects the implicit underlying interplay between demand factors (such as deductibles, and real income) and supply-side factors (such as fee-for-service reimbursement systems);³ (2) supply variables (for example, the number of physicians and the number of nursing home beds), and (3) a channel of finance module for six sources of funds. Interaction and consistency among these three components are essential features of the projection process.

We produced a matrix which provides sources of funds by type of expenditures. Expenditures and sources of funds for each type of expenditure are aggregated to produce total national health expenditures.

We used an equation with five factors to project types of expenditures. The five factors are: total population; use *per capita* (visits, patient days); the GNP deflator; medical care prices relative to the GNP deflator; and a residual category, real expense per unit of service. This last factor reflects use per unit of service. (See the Technical Note.)

²Expenditure projections for 15 types of expenditures are made. See Technical Note.

³The effects of the other two components of the projection model (supply variables and sources of funds) are reflected in the five-factor module.

TABLE 3

Historical Estimates and Projections of the Number of Active Physicians and Dentists, Selected Years, 1950-1990¹

Year	Number of Active Physicians (as of Dec. 31)			Number of Active Dentists (as of Dec. 31)
	Total	M.D.s	D.O.s	
Historical				
1950	219,897	208,997	10,900	79,190
1955	240,153	228,553	11,600	84,370
1960	259,417	247,257	12,160	90,120
1965	289,824	278,724	11,100 ²	95,990
1970	326,503	314,163	12,340	102,220
1975	384,160	370,100	14,060	112,020
1979	435,500	419,100	16,400	123,500
Projections				
1981	461,400	443,400	18,000	130,100
1985	516,000	494,000	22,000	142,500
1990	582,800	554,700	28,100	157,000

Average Annual Percent Increases for Selected Periods

1950-55	1.8	1.8	1.3	1.3
1955-60	1.6	1.6	0.9	1.3
1960-65	2.2	2.4	(-1.8) ²	1.3
1965-70	2.4	2.4	2.1	1.3
1970-75	3.3	3.3	2.6	1.8
1975-79	3.2	3.2	3.9	2.5
1979-81	2.9	2.9	4.8	2.6
1981-85	2.8	2.7	5.1	2.3
1985-90	2.5	2.3	5.0	2.0
1965-79	3.0	3.0	2.8	1.8
1979-85	2.9	2.8	5.0	2.4
1979-90	2.7	2.6	5.0	2.2

¹ Division of Health Professions Analysis, Bureau of Health Professions, Health Resources Administration, *Projections of Supply of Manpower in Selected Health Occupations: 1950-1990*; U.S. Department of Health and Human Services, August 1980; and Division of Health Profession Analysis, Bureau of Health Professions, Health Resources Administration, "Projections of Active Physicians and Dentists, 1976-1990," U.S. Department of Health and Human Services, unpublished, October 14, 1980. Some historical estimates are unpublished.

² The decline in the number of active D.O.s between 1960 and 1965 reflects the granting of approximately 2,400 M.D. degrees to osteopathic physicians who had graduated from the University of California College of Medicine at Irvine. These physicians are included with active M.D.s, beginning in 1962.

Five-Factor Module for Projecting Expenditure Types

The Five-Factor Module for expenditure types can be expressed as an equation that is sequentially solved for each year, 1980 to 1990:

$$E_{it} = E_{it-1} (1 + \overset{\circ}{POP}_t) \left(1 + \left[\frac{\overset{\circ}{UTIL}}{POP}\right]_{it}\right) (1 + \overset{\circ}{PGNP}_t) \left(1 + \left[\frac{\overset{\circ}{MEDPRICE}}{PGNP}\right]_{it}\right) (1 + \overset{\circ}{RU}_{it})$$

E_{it} is the projected level of health expenditure of type "i" in year "t" (for example, the level of expenditures for physicians' services in 1980, the first year of projected values).

E_{it-1} is the level of health expenditure of type "i" for year "t-1." This is an historical value for calendar 1979 and a projected value thereafter. Historical expenditures are from the Health Care Financing Administration. (See Technical Note.)

$\overset{\circ}{POP}_t$ is the projected annual percent change, divided by 100, of total population for year "t" compared to year "t-1." For example, population was projected to grow from 225,041 (in thousands) in 1979 to 227,066 (in thousands) in 1980, an increase of 0.90 percent.

(227,066/225,041 = 1.009). POP_{1980} is .009 and the first term in parentheses of the five-factor equation for E_{1980} is 1.009.

Shifts in the demographic mix (for example, toward more aged persons) that affect utilization growth rates are factored into the next variable, growth in use *per capita*.

$\left[\frac{\overset{\circ}{UTIL}}{POP}\right]_{it}$ is the projected annual percent change, divided by 100, of *per capita* use of medical service type "i" in year "t," where use is measured by patient visits *per capita* or patient days *per capita*.

$\overset{\circ}{PGNP}_t$ is the projected annual percent change, divided by 100, of the implicit price deflator for GNP for year "t." Growth in the GNP deflator reflects economy-wide cost pressures that are external to the health care industry.

$\left[\frac{\overset{\circ}{MEDPRICE}}{PGNP}\right]_{it}$ is the projected annual percent change, divided by 100, of medical care price for service type "i" in year "t" deflated by the implicit price deflator for GNP for year "t." This measures change in medical care prices relative to overall prices in the economy. It captures the implicit underlying interplay of (1) demand-pull inflationary forces (such as

changes in deductibles and coinsurance); (2) cost pressures specific to the industry; (3) supply-side pricing behavior; (4) supply-side productivity behavior, and so on.

$\overset{\circ}{RU}_{it}$

is the projected annual percent change, divided by 100, of the residual category of "RU" for service type "i" for year "t." This factor can be interpreted as the percent changes in real expenditures per unit of service, such as per physician visit or per hospital day. This factor includes changes in the number of diagnostic and therapeutic procedures provided per visit or inpatient day, and changes in the mix of services. Changes in regulations that impact on the quantity and quality of resources used to produce a visit or patient day are also included in this category. For example, growth in hours per patient day used for administrative services and for medical records is contained in this category. Like all residuals, it is an amalgamation of effects that cannot be individually measured or broken down into separate parts. Since the measures of price used are imperfect, this category should be interpreted with caution.

Growth in real expense per unit of service appears to be sensitive to demand factors (such as deductibles, coinsurance rates, real income, and greater faith in the efficacy of new and additional diagnostic and therapeutic procedures and services). Growth in real expense per unit of service also appears to be sensitive to supply-side factors, such as our fee-for-service and retrospective cost-based reimbursement systems, which reward providers who supply larger quantities and more costly service with more revenues.

For a chart presentation of how the five factors accounted for growth in expenditures for physicians' services for the last decade, see Figure 1B.

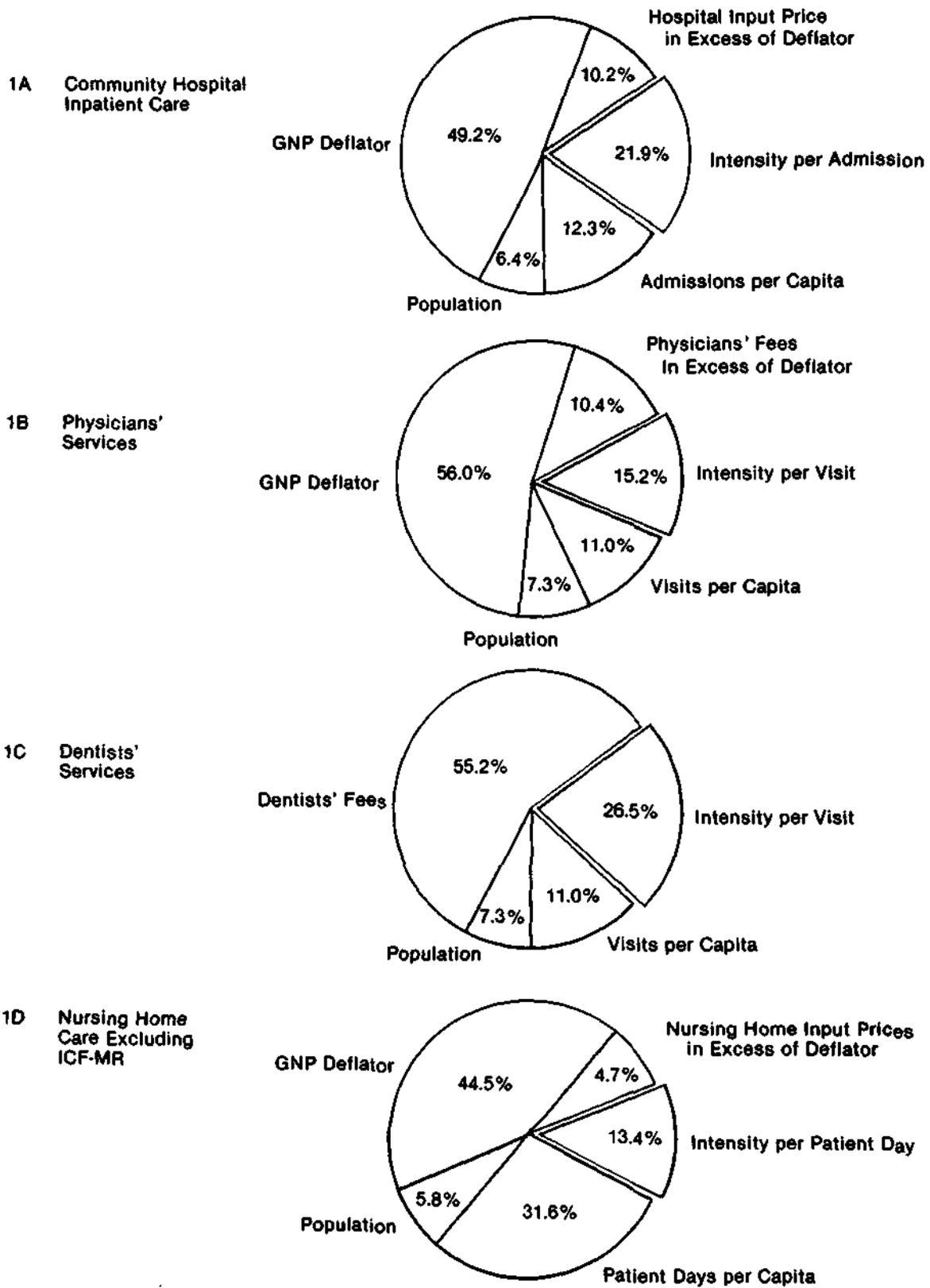
While the general model accounts for five factors, due to irrelevance or lack of data, models for some types of expenditure have four factors. In these instances, growth rates for use *per capita* and real expense per unit of service are combined into one residual category, growth in real expenditures *per capita* (see Technical Note).

The combined effects of the five factors are multiplied to obtain a composite annual rate of expenditure growth for each type of expenditure for each year, 1980 to 1990.

Projection of Growth Rates for the Five Factor Module

The numerous data sources that were used to factor individual types of expenditures into the three components specific to the health sector (use *per capita*, medical care prices relative to overall prices in the economy, and real expenses per unit of service) are listed in the Technical Note at the end of this paper. Growth rates from 1980 to 1990 for these factors are based on historical relationships and trends. We studied annual percent

FIGURE 1
Factors Accounting for Growth in Expenditures for Selected Services 1969-1979



changes and average annual growth rates for selected sub-periods between 1965 and 1979. We considered certain sub-periods irrelevant, because they were affected by unique forces not expected to be repeated.

For example, the initial impact of Medicare on prices and use of services was not considered relevant in making baseline expenditure projections for 1980 to 1990. Other sub-periods were combined when one offset the other. The Economic Stabilization Program (ESP) period, for example (which covered August 1971 through April 1974), is combined with the post-ESP bulge period to average a possible offset related to prices and use.

To determine the growth rates of medical care prices relative to the GNP deflator, we paid particular attention to the growth in this variable during the initial implementation of Medicare, the Economic Stabilization Program (ESP), the post-ESP bulge, and the current "Voluntary Effort" period. We also noted atypical movements in the GNP deflator since during periods of high growth in energy prices, interest rates, and commodity prices, the relationship of medical care prices to the GNP deflator usually shifts, with medical care prices growing at relatively slower rates.

Growth rates in use *per capita* and real expense per unit of service may be influenced by shifts in the age-sex distribution of the population (Feldstein, 1971c; Fuchs and Kramer, 1972), and by changes in the proportion of expenses funded by third parties, health manpower, real income, and regulation of the health sector. When projected changes in these determinants deviated significantly from historical trends, we reflected such changes in the projected growth rates for use *per capita* and real expense per unit of service. We also examined growth rates for use *per capita* and real expenses per unit of service together, since one may offset the other. Years of abnormally high growth in visits *per capita* for example, may be associated with years of abnormally low growth in real expense per visit, and vice-versa.

Taking the above considerations into account, we projected year-to-year growth rates from 1980 to 1990 for medical care prices relative to the implicit price deflator for GNP, use *per capita*, and real expenses per unit of service.

These growth rates, combined with projections of growth rates for total population and the implicit price deflator for GNP, yielded yearly expenditure growth rates for each type of service from 1980 to 1990. The projected levels of expenditures for each year and each type of expenditure were calculated. We then summed the projections for each expenditure type, which resulted in the projected yearly total of national health expenditures.

Projection of Selected Supply Variables

We projected selected supply variables simultaneously with the projection process just discussed (the five-factor projection module). In some cases supply projections were taken from specialists in those areas (see Technical Note).

Projections of the number of active M.D.s, Doctors of Osteopathy, (DOs), and dentists are obtained from the Bureau of Health Professions within the Department of Health and Human Services. Projections of non-Federal office-based M.D.s, DOs, and dentists are then made by

the Health Care Financing Administration based on historical relationships between active physicians and dentists and non-Federal office-based practitioners.

Revenues and real output per non-Federal office-based physician and dentist are projected simultaneously with the five-factor methods of projecting expenditures for services of physicians and dentists. Growth in the number of visits, real expenditures per visit, and medical care prices relative to the GNP deflator are iteratively adjusted until reasonableness based on historical trends and relationships is obtained for both the five-factor module and the revenues and real output per physician and dentist sectors.⁴

The Health Care Financing Administration projects the number of community hospital beds, Federal hospital beds, and nursing home beds. The number of beds and occupancy rates are projected simultaneously with patient days to reflect judgments relating to the interplay of patient demand (involving such factors as: demographics, insurance, and real income), regulations pertaining to new construction, credit cost, and credit availability. Expenditures for medical facilities construction are projected in nominal and real terms and are related to the growth in the number of community hospital, Federal hospital, and nursing home beds (see Technical Note).

Projection of Source of Funds

For each type of expenditure, the Channel of Finance Module projects six sources of funds: 1) direct or out-of-pocket payments, 2) private health insurance, 3) spending by philanthropic organizations, industrial in-plant health services (for example an on-site nurse), and privately financed construction, 4) Medicare, 5) other Federal, and 6) State and local (Gibson, 1980).⁵

Medicare actuaries' projections of Medicare benefit outlays used the same assumptions for overall inflation, GNP, and so forth (Tables 1 and 2) that were used for national health expenditures.

We based projections for all other sources of funds on historical trends. We asked this question: What proportion of each expenditure type was attributable to a particular source of funds? Trends in these proportions were projected from 1980 to 1990. In each year for which projections were made, the sum of the proportions for all sources for each type of expenditure was constrained to equal 100 percent. Yearly changes in proportions preserved historical trends. We adjusted figures derived from the Channel of Finance and the Five-Factor Modules for consistency and reasonableness.

⁴Similar procedures for adjusting projection outputs to obtain reasonableness and consistency for both sides of the "equation" are described in Lewis and Turner (1967).

⁵These are the sources of funds in Gibson (1980, Table 4). Five categories of sources are displayed in Tables 4 and 5 of this paper; (1) direct payments, (2) private health insurance, (3) other private, (4) Federal (Medicare, Federal Medicaid, other Federal) and (5) State and local (State Medicaid, other State and local).

TABLE 4
National Health Expenditures by Type of Expenditure and Source of Funds, Selected Years, 1965-1990¹

Type of Expenditure	Private						Public		
	Total	Consumer			Other ²	Total	Federal	State & Local	
		Total	Total	Direct Insurance					
Amount (in millions)									
1965									
Total	\$41,994	\$31,020	\$28,586	\$18,584	\$10,001	\$2,434	\$10,974	\$5,625	\$5,349
Health Services and Supplies	38,551	29,552	28,586	18,584	10,001	966	8,999	4,144	4,854
Personal Health Care	36,000	28,101	27,313	18,684	8,729	788	7,899	3,785	4,114
Hospital Care	13,885	8,473	8,164	2,374	5,790	309	5,412	2,430	2,982
Physicians' Services	8,473	7,895	7,877	5,197	2,680	8	588	151	436
Dentists' Services	2,809	2,760	2,760	2,717	43	--	49	32	17
Other Professional Services	1,033	994	976	897	79	18	39	12	26
Drugs and Medical Sundries	5,212	5,015	5,015	4,661	135	--	197	120	76
Eyeglasses and Appliances	1,211	1,182	1,182	1,161	1	--	29	12	17
Nursing Home Care	2,072	1,360	1,339	1,337	2	21	712	460	251
Other Health Services	1,306	431	--	--	--	431	875	568	306
Prepayment and Administration	1,736	1,451	1,272	--	1,272	178	286	14	271
Government Public Health Activities	814	--	--	--	--	--	814	344	469
Research and Construction of									
Medical Facilities	3,443	1,468	--	--	--	1,468	1,975	1,481	495
Research ³	1,446	176	--	--	--	176	1,270	1,176	95
Construction	1,997	1,292	--	--	--	1,292	705	305	400
1970									
Total	\$74,903	\$47,094	\$43,313	\$26,128	\$17,185	\$3,761	\$27,809	\$17,617	\$10,191
Health Services and Supplies	68,583	44,534	43,313	26,128	17,185	1,221	25,049	15,745	9,304
Personal Health Care	65,372	42,912	41,872	26,128	15,744	1,040	22,460	14,561	7,899
Hospital Care	27,799	13,208	12,824	2,816	10,008	384	14,591	9,428	5,163
Physicians' Services	14,340	11,247	11,237	6,328	4,908	10	3,093	2,232	861
Dentists' Services	4,750	4,526	4,526	4,286	240	--	223	130	93
Other Professional Services	1,595	1,376	1,357	1,094	262	20	218	138	80
Drugs and Medical Sundries	8,208	7,724	7,724	7,414	310	--	484	239	245
Eyeglasses and Appliances	1,926	1,817	1,817	1,815	3	--	108	79	29
Nursing Home Care	4,697	2,421	2,387	2,375	12	34	2,276	1,339	938
Other Health Services	2,058	592	--	--	--	592	1,466	976	490
Prepayment and Administration	2,791	1,622	1,441	--	1,441	181	1,168	568	600
Government Public Health Activities	1,420	--	--	--	--	--	1,420	615	805
Research and Construction of									
Medical Facilities	5,320	2,560	--	--	--	2,560	2,760	1,872	888
Research ³	1,889	215	--	--	--	215	1,674	1,491	183
Construction	3,431	2,345	--	--	--	2,345	1,088	381	705
1975									
Total	\$132,120	\$75,811	\$70,739	\$37,725	\$33,014	\$5,072	\$56,309	\$37,079	\$19,230
Health Services and Supplies	123,822	72,476	70,739	37,725	33,014	1,737	51,346	33,915	17,431
Personal Health Care	116,522	70,341	68,802	37,725	31,077	1,539	46,182	31,531	14,650
Hospital Care	52,141	23,286	22,744	3,978	18,766	542	28,855	20,253	8,802
Physicians' Services	24,932	18,380	18,366	8,682	9,684	14	6,552	4,665	1,887
Dentists' Services	8,237	7,770	7,770	6,412	1,358	--	467	275	192
Other Professional Services	2,619	2,045	2,016	1,596	420	29	573	375	198
Drugs and Medical Sundries	11,813	10,786	10,786	10,048	738	--	1,027	527	500
Eyeglasses and Appliances	2,982	2,757	2,757	2,757	32	--	226	174	51
Nursing Home Care	10,105	4,424	4,362	4,284	78	61	5,681	3,186	2,496
Other Health Services	3,692	892	--	--	--	892	2,800	2,076	723
Prepayment and Administration	4,143	2,136	1,937	--	1,937	199	2,007	1,163	845
Government Public Health Activities	3,157	--	--	--	--	--	3,157	1,221	1,936
Research and Construction of									
Medical Facilities	8,298	3,335	--	--	--	3,335	4,963	3,164	1,799
Research ³	3,239	264	--	--	--	264	2,975	2,676	299
Construction	5,059	3,071	--	--	--	3,071	1,988	488	1,500

(Continued)

TABLE 4 (Continued)
National Health Expenditures by Type of Expenditure and Source of Funds, Selected Years, 1965-1990¹

Type of Expenditure	Private						Public		
	Total	Consumer			Other ²	Total	Federal	State & Local	
		Total	Total	Direct					Insurance
Amount (in millions)									
1978									
Total	\$212,199	\$120,806	\$114,393	\$59,973	\$54,420	\$6,413	\$91,393	\$60,941	\$30,453
Health Services and Supplies	202,318	117,081	114,393	59,973	54,420	2,688	85,237	56,439	28,798
Personal Health Care	186,551	112,666	110,259	59,973	50,286	2,407	75,884	53,311	22,573
Hospital Care	85,342	37,650	36,708	6,905	29,803	942	47,692	34,686	12,806
Physicians' Services	40,599	29,975	29,951	14,813	15,138	24	10,824	7,999	2,625
Dentists' Services	13,607	13,068	13,068	9,938	3,130	--	539	298	241
Other Professional Services	4,687	3,487	3,435	2,832	604	52	1,200	848	352
Drugs and Medical Sundries	16,975	15,555	15,555	14,216	1,339	--	1,420	705	716
Eyeglasses and Appliances	4,353	3,944	3,944	3,789	155	--	409	332	77
Nursing Home Care	17,807	7,705	7,598	7,481	117	107	10,102	5,461	4,642
Other Health Services	5,180	1,263	--	--	--	1,283	3,897	2,783	1,114
Prepayment and Administration	7,720	4,414	4,133	--	4,133	281	3,506	1,787	1,519
Government Public Health Activities	6,047	--	--	--	--	--	6,047	1,341	4,706
Research and Construction of Medical Facilities	9,882	3,725	--	--	--	3,725	6,156	4,502	1,655
Research ³	4,615	285	--	--	--	285	4,330	3,901	429
Construction	5,267	3,440	--	--	--	3,440	1,827	601	1,226
1981									
Total	\$276,543	\$157,749	\$149,838	\$76,015	\$73,823	\$7,911	\$120,794	\$80,743	\$40,051
Health Services and Supplies	266,616	153,290	149,838	76,015	73,823	3,452	113,328	75,824	36,146
Personal Health Care	246,686	145,927	142,806	76,015	66,792	3,121	100,759	71,334	29,425
Hospital Care	112,277	49,249	48,018	8,978	39,040	1,232	63,027	46,413	16,614
Physicians' Services	52,863	36,805	36,574	18,679	19,895	31	14,257	10,950	3,306
Dentists' Services	19,054	17,398	17,398	12,697	4,701	--	656	359	297
Other Professional Services	6,343	4,658	4,588	3,651	937	70	1,685	1,222	464
Drugs and Medical Sundries	20,636	18,932	18,932	17,119	1,812	--	1,704	877	828
Eyeglasses and Appliances	5,333	4,792	4,792	4,570	222	--	541	441	100
Nursing Home Care	24,528	10,653	10,506	10,320	185	148	13,876	7,473	6,403
Other Health Services	6,852	1,641	--	--	--	1,641	5,012	3,600	1,412
Prepayment and Administration	11,637	7,362	7,031	--	7,031	331	4,274	2,315	1,959
Government Public Health Activities	8,295	--	--	--	--	--	8,295	1,533	6,762
Research and Construction of Medical Facilities	11,925	4,459	--	--	--	4,459	7,465	5,560	1,905
Research ³	5,614	342	--	--	--	342	5,472	4,843	529
Construction	6,111	4,117	--	--	--	4,117	1,993	617	1,376
1985									
Total	\$462,229	\$255,661	\$243,955	\$118,731	\$125,224	\$11,706	\$205,568	\$139,722	\$66,847
Health Services and Supplies	444,575	249,451	243,955	118,731	125,224	5,497	195,124	130,961	64,163
Personal Health Care	410,288	236,976	231,904	118,731	113,173	5,074	173,310	125,197	48,114
Hospital Care	189,528	81,736	79,662	14,887	64,776	2,074	107,792	81,330	26,462
Physicians' Services	87,494	62,425	62,374	29,100	33,273	51	25,069	19,797	5,272
Dentists' Services	29,863	28,827	28,827	19,451	9,376	--	1,036	595	441
Other Professional Services	10,858	7,890	7,771	5,896	1,876	120	2,966	2,152	816
Drugs and Medical Sundries	29,581	27,049	27,049	23,978	3,070	--	2,532	1,286	1,246
Eyeglasses and Appliances	7,896	7,045	7,045	6,626	418	--	941	784	157
Nursing Home Care	44,613	19,445	19,176	18,794	382	269	25,168	13,507	11,661
Other Health Services	10,305	2,561	--	--	--	2,561	7,804	5,745	2,059
Prepayment and Administration	18,984	12,474	12,051	--	12,051	422	6,511	3,411	3,100
Government Public Health Activities	15,303	--	--	--	--	--	15,303	2,354	12,949
Research and Construction of Medical Facilities	17,643	6,210	--	--	--	6,210	10,444	8,761	2,673
Research ³	9,054	433	--	--	--	433	8,622	7,844	778
Construction	8,589	5,777	--	--	--	5,777	2,822	917	1,905

(Continued)

TABLE 4 (Continued)
National Health Expenditures by Type of Expenditure and Source of Funds, Selected Years, 1965-1990¹

Type of Expenditure	Private						Public			
	Total	Consumer			Total	Insurance	Other ²	Total	Federal	State & Local
		Total	Total	Direct						
Amount (in millions)										
1990										
Total	\$821,017	\$440,005	\$422,021	\$196,219	\$225,802	\$17,984	\$381,013	\$262,497	\$118,516	
Health Services and Supplies	794,590	431,282	422,021	196,219	225,802	9,261	363,307	248,697	114,610	
Personal Health Care	731,438	409,109	400,404	196,219	204,185	8,705	322,330	238,544	83,786	
Hospital Care	354,668	149,299	145,426	27,272	118,154	3,873	205,369	159,464	45,906	
Physicians' Services	150,319	104,470	104,384	47,214	57,170	87	45,849	36,838	9,010	
Dentists' Services	52,022	50,277	50,277	31,573	18,704	--	1,745	1,036	707	
Other Professional Services	19,139	13,841	13,630	10,201	3,429	211	5,298	3,838	1,460	
Drugs and Medical Sundries	44,434	40,542	40,542	35,353	5,189	--	3,892	1,976	1,916	
Eyeglasses and Appliances	12,559	10,854	10,854	10,099	755	--	1,446	1,447	259	
Nursing Home Care	81,927	35,784	36,291	35,506	784	494	46,143	24,733	21,410	
Other Health Services	16,371	4,041	--	--	--	4,041	12,330	9,213	3,117	
Prepayment and Administration	32,882	22,173	21,617	--	21,617	556	10,709	5,537	5,172	
Government Public Health Activities	30,269	--	--	--	--	--	30,269	4,616	25,653	
Research and Construction of Medical Facilities	26,428	8,122	--	--	--	8,722	17,705	13,790	3,905	
Research ²	14,380	629	--	--	--	629	13,751	12,515	1,236	
Construction	12,048	8,093	--	--	--	8,093	3,954	1,285	2,669	

¹Historical estimates are reported in Robert M. Gibson, "National Health Expenditures, 1979," *Health Care Financing Review*, Summer 1980, pp. 17-20.

²Spending by philanthropic organizations, industrial inplant services, and privately financed construction.

³Research and development expenditures of drug companies and other manufacturers and providers of medical equipment and supplies are excluded from "research expenditures," but are included in the expenditure class in which the product falls.

TABLE 5

Per Capita National Health Expenditures by Type of Expenditure and Source of Funds, Selected Years, 1965-1990¹

Type of Expenditure	Private Consumer						Public		
	Total	Total	Total	Direct	Insurance	Other ²	Total	Federal	State &
									Local
Per Capita Amount ³									
1965									
Total	\$212.32	\$156.84	\$144.53	\$93.96	\$50.57	\$12.31	\$55.48	\$28.44	\$27.04
Health Services and Supplies	194.91	149.42	144.53	93.96	50.57	4.89	45.50	20.95	24.54
Personal Health Care	182.02	142.08	138.10	93.96	44.13	3.98	39.94	19.14	20.80
Hospital Care	70.20	42.84	41.28	12.00	29.27	1.56	27.36	12.28	15.08
Physicians' Services	42.84	39.87	39.83	26.28	13.55	.04	2.97	.76	2.21
Dentists' Services	14.20	13.95	13.95	13.74	.22	--	.25	.16	.08
Other Professional Services	5.22	5.03	4.93	4.54	.40	.09	.20	.06	.13
Drugs and Medical Sundries	26.35	25.36	25.36	24.68	.68	--	.99	.61	.39
Eyeglasses and Appliances	6.12	5.98	5.98	5.97	.01	--	.15	.06	.08
Nursing Home Care	10.46	6.88	6.77	6.76	.01	.11	3.60	2.33	1.27
Other Health Services	6.60	2.18	--	--	--	2.18	4.43	2.87	1.55
Prepayment and Administration	8.78	7.34	6.43	--	6.43	.90	1.44	.07	1.37
Government Public Health Activities	4.11	--	--	--	--	--	4.11	1.74	2.37
Research and Construction of Medical Facilities	17.41	7.42	--	--	--	7.42	9.99	7.49	2.50
Research ⁴	7.31	.89	--	--	--	.89	6.42	5.94	.48
Construction	10.10	6.53	--	--	--	6.53	3.57	1.54	2.02
1970									
Total	\$359.41	\$225.98	\$207.83	\$125.37	\$82.46	\$18.14	\$133.44	\$84.53	\$48.90
Health Services and Supplies	333.89	213.69	207.83	125.37	82.46	5.86	120.19	75.55	44.64
Personal Health Care	313.68	205.91	200.92	125.37	75.54	4.99	107.77	69.87	37.90
Hospital Care	133.39	63.39	61.54	13.51	48.02	1.84	70.01	45.24	24.77
Physicians' Services	68.81	53.97	53.92	30.37	23.55	.05	14.84	10.71	4.13
Dentists' Services	22.79	21.72	21.72	20.57	1.15	--	1.07	.62	.45
Other Professional Services	7.65	6.60	6.51	5.25	1.26	.10	1.05	.66	.39
Drugs and Medical Sundries	39.39	37.06	37.06	35.57	1.49	--	2.32	1.15	1.18
Eyeglasses and Appliances	9.24	8.72	8.72	8.71	.01	--	.52	.38	.14
Nursing Home Care	22.54	11.62	11.45	11.39	.06	.16	10.92	6.42	4.50
Other Health Services	9.87	2.84	--	--	--	2.84	7.03	4.69	2.35
Prepayment and Administration	13.39	7.78	6.92	--	6.92	.87	5.61	2.73	2.88
Government Public Health Activities	6.81	--	--	--	--	--	6.81	2.96	3.86
Research and Construction of Medical Facilities	25.53	12.28	--	--	--	12.28	13.24	8.98	4.26
Research ⁴	9.06	1.03	--	--	--	1.03	8.03	7.15	.88
Construction	16.46	11.25	--	--	--	11.25	5.21	1.83	3.38
1975									
Total	\$607.58	\$348.63	\$325.31	\$173.49	\$151.82	\$23.33	\$258.95	\$170.52	\$88.43
Health Services and Supplies	569.42	333.30	325.31	173.49	151.82	7.99	236.13	155.96	80.16
Personal Health Care	535.85	323.48	316.40	173.49	142.91	7.08	212.38	145.00	67.37
Hospital Care	239.78	107.09	104.59	18.29	86.30	2.49	132.70	93.14	39.56
Physicians' Services	114.66	84.53	84.46	39.93	44.53	.06	30.13	21.45	8.68
Dentists' Services	37.88	35.73	35.73	29.49	6.24	--	2.15	1.26	.88
Other Professional Services	12.04	9.41	9.27	7.34	1.93	.13	2.64	1.72	.91
Drugs and Medical Services	54.33	49.60	49.60	46.21	3.40	--	4.72	2.42	2.30
Eyeglasses and Appliances	13.72	12.68	12.68	12.53	.15	--	1.04	.80	.23
Nursing Home Care	46.47	20.34	20.06	19.70	.36	.28	26.13	14.65	11.46
Other Health Services	16.98	4.10	--	--	--	4.10	12.87	9.55	3.33
Prepayment and Administration	19.05	9.82	8.91	--	8.91	.91	9.23	5.35	3.88
Government Public Health Activities	14.52	--	--	--	--	--	14.52	5.61	8.90
Research and Construction of Medical Facilities	38.16	15.34	--	--	--	15.34	22.82	14.55	8.27
Research ⁴	14.90	1.21	--	--	--	1.21	13.68	12.31	1.38
Construction	23.26	14.12	--	--	--	14.12	9.14	2.25	6.90

(Continued)

TABLE 5 (Continued)
National Health Expenditures by Type of Expenditure and Source of Funds, Selected Years, 1965-1990¹

Type of Expenditure	Private Consumer								
	Total	Total	Total	Direct	Insurance	Other ²	Total	Federal	State & Local
	Per Capita Amount ³								
	1979								
Total	\$942.94	\$536.82	\$508.32	\$266.50	\$241.82	\$28.50	\$406.12	\$270.80	\$135.32
Health Services and Supplies	899.03	520.26	508.32	266.50	241.82	11.94	378.76	250.79	127.97
Personal Health Care	837.85	500.65	489.95	266.50	223.45	10.70	337.20	236.90	100.31
Hospital Care	379.23	167.30	163.12	30.68	132.43	4.18	211.93	155.02	56.90
Physicians' Services	180.41	133.20	133.09	65.82	67.27	.11	47.21	35.55	11.66
Dentists' Services	60.46	58.07	58.07	44.16	13.91	--	2.39	1.32	1.07
Other Professional Services	20.83	15.50	15.27	12.58	2.68	.23	5.33	3.77	1.57
Drugs and Medical Sundries	75.43	69.12	69.12	63.17	5.95	--	6.31	3.13	3.18
Eyeglasses and Appliances	19.34	17.52	17.52	16.84	.69	--	1.82	1.47	.34
Nursing Home Care	79.13	34.24	33.76	33.24	.52	.48	44.89	24.27	20.63
Other Health Services	23.02	5.70	--	--	--	5.70	17.32	12.37	4.95
Prepayment and Administration	34.31	19.62	18.37	--	18.37	1.25	14.69	7.94	6.75
Government Public Health Activities	26.87	--	--	--	--	--	26.87	5.96	20.91
Research and Construction of Medical Facilities	43.91	16.55	--	--	--	16.55	27.36	20.00	7.35
Research ⁴	20.51	1.27	--	--	--	1.27	19.24	17.33	1.91
Construction	23.40	15.29	--	--	--	15.29	8.12	2.67	5.45
	1981								
Total	\$1,216.00	\$689.00	\$654.00	\$332.00	\$322.00	\$35.00	\$527.00	\$352.00	\$175.00
Health Services and Supplies	1,164.00	669.00	654.00	332.00	322.00	15.00	495.00	328.00	167.00
Personal Health Care	1,077.00	637.00	623.00	332.00	292.00	14.00	440.00	311.00	129.00
Hospital Care	490.00	215.00	210.00	39.00	170.00	5.00	275.00	203.00	72.00
Physicians' Services	231.00	168.00	168.00	82.00	87.00	⁵ 62.00	48.00	48.00	14.00
Dentists' Services	79.00	76.00	76.00	55.00	21.00	--	3.00	2.00	1.00
Other Professional Services	28.00	20.00	20.00	16.00	4.00	⁵ 7.00	5.00	2.00	2.00
Drugs and Medical Sundries	90.00	83.00	83.00	75.00	8.00	--	7.00	4.00	3.00
Eyeglasses and Appliances	23.00	21.00	21.00	20.00	1.00	--	2.00	2.00	⁵
Nursing Home Care	107.00	46.00	46.00	45.00	1.00	1.00	61.00	33.00	28.00
Other Health Services	29.00	7.00	--	--	--	7.00	22.00	16.00	6.00
Prepayment and Administration	51.00	32.00	31.00	--	--	1.00	19.00	10.00	9.00
Government Public Health Activities	36.00	--	--	--	--	--	36.00	7.00	29.00
Research and Construction of Medical Facilities	52.00	19.00	--	--	--	19.00	33.00	24.00	9.00
Research ⁴	25.00	1.00	--	--	--	1.00	24.00	22.00	2.00
Construction	27.00	18.00	--	--	--	18.00	9.00	2.00	7.00
	1985								
Total	\$1,946.00	\$1,077.00	\$1,027.00	\$500.00	\$527.00	\$49.00	\$870.00	\$588.00	\$282.00
Health Services and Supplies	1,872.00	1,050.00	1,027.00	500.00	527.00	23.00	822.00	551.00	271.00
Personal Health Care	1,727.00	998.00	977.00	500.00	477.00	21.00	730.00	527.00	203.00
Hospital Care	798.00	344.00	335.00	63.00	273.00	8.00	454.00	342.00	102.00
Physicians' Services	368.00	263.00	263.00	123.00	140.00	⁵ 106.00	83.00	83.00	23.00
Dentists' Services	126.00	121.00	121.00	82.00	39.00	--	4.00	3.00	1.00
Other Professional Sundries	46.00	33.00	33.00	25.00	8.00	1.00	12.00	9.00	3.00
Drugs and Medical Sundries	125.00	114.00	114.00	101.00	13.00	--	11.00	5.00	6.00
Eyeglasses and Appliances	33.00	30.00	30.00	28.00	2.00	--	4.00	3.00	1.00
Nursing Home Care	188.00	82.00	81.00	79.00	2.00	1.00	106.00	57.00	49.00
Other Health Services	44.00	11.00	--	--	--	11.00	33.00	24.00	9.00
Prepayment and Administration	80.00	53.00	51.00	--	51.00	2.00	27.00	14.00	13.00
Government Public Health Activities	64.00	--	--	--	--	--	64.00	10.00	54.00
Research and Construction of Medical Facilities	74.00	26.00	--	--	--	26.00	44.00	37.00	7.00
Research ⁴	38.00	2.00	--	--	--	2.00	36.00	33.00	3.00
Construction	36.00	24.00	--	--	--	24.00	12.00	4.00	8.00

(Continued)

TABLE 5 (Continued)
National Health Expenditures by Type of Expenditure and Source of Funds, Selected Years, 1965-1990¹

Type of Expenditure	Private						Public		State & Local
	Total	Consumer			Total	Federal	State & Local		
		Total	Direct	Insurance				Other ²	
Per Capita Amount ³									
1990									
Total	\$3,309.00	\$1,773.00	\$1,701.00	\$791.00	\$910.00	\$73.00	\$1,535.00	\$1,058.00	\$478.00
Health Services and Supplies	3,203.00	1,736.00	1,701.00	791.00	910.00	37.00	1,464.00	1,002.00	462.00
Personal Health Care	2,948.00	1,649.00	1,614.00	791.00	823.00	35.00	1,299.00	961.00	338.00
Hospital Care	1,430.00	602.00	596.00	10.00	476.00	16.00	828.00	643.00	185.00
Physicians' Services	606.00	421.00	421.00	190.00	231.00	--	185.00	148.00	36.00
Dentists' Services	210.00	203.00	203.00	127.00	76.00	--	7.00	4.00	3.00
Other Professional Services	77.00	56.00	55.00	41.00	14.00	1.00	21.00	16.00	5.00
Drugs and Medical Sundries	179.00	163.00	163.00	142.00	21.00	--	16.00	8.00	8.00
Eyeglasses and Appliances	51.00	44.00	44.00	41.00	3.00	--	6.00	5.00	1.00
Nursing Home Care	330.00	144.00	145.00	142.00	3.00	2.00	186.00	100.00	86.00
Other Health Services	66.00	16.00	--	--	--	16.00	50.00	37.00	13.00
Prepayment and Administration	133.00	89.00	87.00	--	87.00	2.00	43.00	22.00	11.00
Government Public Health Activities	122.00	--	--	--	--	--	122.00	19.00	103.00
Research and Construction of Medical Facilities	107.00	35.00	--	--	--	35.00	71.00	56.00	16.00
Research ⁴	58.00	2.00	--	--	--	2.00	55.00	51.00	4.00
Construction	49.00	33.00	--	--	--	33.00	16.00	5.00	11.00

¹Historical estimates are reported in Robert M. Gibson, "National Health Expenditures, 1979", *Health Care Financing Review*, Summer 1980, pp. 17-20.

²Spending by philanthropic organizations, industrial inplant services, and privately financed construction.

³Per capita amounts in projections are rounded to nearest dollar.

⁴Research and development expenditures of drug companies and other manufacturers and providers of medical equipment and supplies are excluded from "research expenditures," but are included in the expenditure class in which the product falls.

⁵Less than \$0.50.

Projected Trends

The remainder of the article reports detailed projections of national health expenditures focusing first on short-term and long-term economic outlooks for the U.S. economy; second on trends in aggregate national health expenditures and sources of funds, accompanied by commentary on factors influencing growth; and third on projections of individual types of expenditure and sources of funds.

Short-Term Economic Outlook for the U.S. Economy, 1979-1981

The short-term outlook for the economy for the period 1979 to 1981 can be characterized as no real growth and high inflation (Table 1). The Trustees' Report indicates that inflation, as measured by the implicit price deflator for the GNP, will rise at an average annual rate of 9.9 percent, in contrast to an 11.9 percent increase for the Consumer Price Index for All Items (CPIW). The Trustees' Report also indicates that nominal GNP will rise at an average annual rate of 10 percent per year and population will rise at an average annual rate of slightly less than 1 percent per year.

Long-Term Economic Outlook for the U.S. Economy, 1981-1990

For the period 1981 to 1985, the Trustees' Report projects that the GNP will grow at an average annual rate of 12.9 percent (Table 1) with real GNP averaging 4.2 percent and the implicit price deflator 8.4 percent. For the period 1985 to 1990, the Trustees' Report expects that the rate of inflation (GNP deflator) will slow to an average annual rate of 6.9 percent. The Trustees' Report also projects that growth in real GNP will slow to 3.2 percent.

For the entire projection period of 1979 to 1990, the Trustees' Report projects the GNP deflator will escalate at an average annual rate of 8.0 percent, real GNP at 2.9 percent, and nominal GNP at 11.2 percent. During the last decade (1969 to 1979) the GNP deflator increased at an average annual rate of 6.7 percent; real GNP at a 2.9 percent rate; and nominal GNP at a 9.7 percent rate.

As in the historical period (1965 to 1979) population will continue growth at 0.9 percent per year (Table 1). Important shifts are taking place in the demographic mix of the population (Easterlin, 1978; Office of the Actuary, 1980) which affect health expenditure growth (Fisher, 1980). The aged population, especially persons age 75 and over, use health care services with greater frequency than the rest of the population. From 1979 to 1990 the proportion of the population age 65 and over will rise from 11.0 to 12.6 percent, and the proportion of persons age 75 and over will rise from 4.3 percent to 5.4 percent (Table 2).

Projected Trends for Total Health Expenditures and Sources of Funds

Expenditures for health care rose from \$42 billion in 1965 to \$212 billion in 1979, an average annual rate of growth of 12.3 percent. Projected outlays (Table 6 and Figure 2) are:

- \$279 billion by 1981, an average annual rate of increase of 14.6 percent over 1979, \$1,215 per capita;
- \$462 billion by 1985, an average annual rate of increase of 13.5 percent over 1981, \$1,950 per capita;
- \$821 billion by 1990, an average annual rate of increase of 12.2 percent over 1985, \$3,300 per capita.

This growth continues the historical trend in which health spending has doubled every six years.

These projected increases in health care spending are expected to exceed growth rates in the Gross National Products (GNP). Therefore, health expenditures as a share of the GNP will increase. By 1981, the health care sectors share of the GNP is projected to increase to 9.7 percent.⁶ The zero growth in real GNP and fast growth in health care spending (*Health Care Financing Trends*, Fall 1980; *Modern Health Care*, 1980; Waldholz, 1980) account for this increase. Due to extensive third-party payments for health care and the necessary nature of such care, growth in aggregate health care expenditure is relatively insulated from short-term fluctuations in real GNP.

Spending for health care is expected to rise faster in the projection period, 1979-1990 (average annual rate of 13.1 percent) than in the post-Medicare historical period 1969-1979 (average annual rate of 12.3 percent). The projected average annual rate of inflation (GNP deflator) for 1979-1990 is 8.0 compared to 6.7 percent average annual rate for the period 1969-1979. In real terms we project that national health expenditures will rise at slower rates than during the last decade (1969-1979).

The sources of funds to finance national health expenditures have shifted over time. In 1950 private sources funded 73 percent of national health expenditures, the Federal government financed 13 percent, and State and local governments financed 14 percent (Table 6 and Figure 3). These proportions did not greatly change from 1950 to 1965. The Federal Medicare Program

⁶The projected increase in the ratio of health expenditures to the GNP is very sensitive to small differences in projections of national health expenditures and the GNP. For 1981, we revised the projections for national health expenditures (\$278.5 billion) and the GNP (\$2,864.3 billion) upward and downward by 2 percent. We then calculated ratios using the two sets of numbers for expenditures, with the resulting ratios ranging from 9.3 to 10.1 percent.

TABLE 6

Aggregate and Per Capita National Health Expenditures, by Source of Funds and Percent of Gross National Product, Selected Calendar Years, 1929-1990

Year	Gross National Product (billions)	Health Expenditures										
		Total			Private		Total		Public		State and Local	
		Amount (billions)	Per Capita ^a	Percent of GNP	Amount (billions)	Percent of Total						
Historical ¹												
1929	\$103.4	\$3.6	\$29.49	3.5%	\$3.2	86.4%	\$0.5	13.6%	N.A.	N.A.	N.A.	N.A.
1940	100.0	4.0	29.62	4.0	3.2	79.7	0.8	20.3	N.A.	N.A.	N.A.	N.A.
1950	286.2	12.7	61.86	4.4	9.2	72.8	3.4	27.2	1.6	12.8	1.8	14.4
1955	399.3	17.7	105.38	4.4	13.2	74.3	4.6	25.7	2.0	11.3	2.6	14.4
1960	506.0	26.9	146.30	5.3	20.3	75.3	6.6	24.7	3.0	11.2	3.6	13.5
1965	688.1	42.0	212.32	6.1	31.0	73.9	11.0	26.1	5.6	13.4	5.3	12.7
1966	753.0	46.4	231.88	6.2	32.8	70.7	13.6	29.3	7.4	15.9	6.2	13.4
1967	796.3	51.9	256.61	6.5	32.9	63.4	19.1	41.2	11.9	25.6	7.1	15.3
1968	866.5	58.5	286.17	6.7	36.3	62.1	22.2	37.9	14.1	24.1	8.0	13.7
1969	935.5	66.0	319.89	7.1	41.1	62.3	24.9	37.7	16.1	24.4	8.9	13.5
1970	982.4	74.9	359.41	7.6	47.1	62.9	27.8	37.1	17.6	23.5	10.2	13.6
1971	1,063.4	83.1	394.74	7.8	51.4	61.9	31.7	38.1	20.3	24.4	11.4	13.7
1972	1,171.1	93.5	440.34	8.0	58.1	62.1	35.4	37.9	22.8	24.4	12.6	13.5
1973	1,306.5	103.0	481.65	7.9	63.7	61.8	39.4	38.2	25.1	24.4	14.2	13.8
1974	1,412.9	116.3	539.11	8.2	69.1	59.5	47.2	40.6	30.5	26.2	16.7	14.4
1975	1,528.8	132.1	607.58	8.6	75.6	57.4	56.3	42.6	37.1	28.1	19.2	14.6
1976	1,702.2	148.9	678.79	8.7	85.7	57.5	63.2	42.5	42.6	28.6	20.6	13.9
1977	1,899.5	169.9	768.30	8.9	99.3	58.4	70.6	41.6	47.4	27.9	23.2	13.7
1978	2,127.6	188.6	845.53	8.9	108.0	57.2	80.7	42.8	53.9	28.6	26.8	14.2
1979	2,366.8	212.2	942.94	9.0	120.8	56.9	91.4	43.1	60.9	28.7	30.5	14.4
Projections												
1981	2,864.3 ²	278.5	1,216.00	9.7	157.7	56.6	120.8	43.4	80.7	29.0	40.1	14.3
1985	4,653.2 ²	462.2	1,946.00	9.9	255.7	53.3	206.6	44.7	139.7	30.2	66.8	14.5
1990	7,588.7 ²	821.0	3,309.00	10.8	440.0	53.6	381.0	46.4	262.5	32.0	118.5	14.4

Average Annual Percent Increases for Selected Periods

1950-55	3.5	6.9	5.2	--	7.5	--	6.2	--	4.6	--	7.6	--
1955-60	8.3	8.7	6.8	--	9.0	--	7.5	--	8.4	--	6.7	--
1960-65	6.3	9.3	7.7	--	8.8	--	10.8	--	13.3	--	8.0	--
1965-70	7.4	12.3	11.1	--	8.7	--	20.4	--	25.7	--	14.0	--
1970-75	9.2	12.0	11.1	--	10.0	--	15.2	--	16.1	--	13.5	--
1975-79	11.6	12.6	11.6	--	12.4	--	12.9	--	13.2	--	12.3	--
1979-81	10.0	14.6	13.5	--	14.4	--	15.0	--	15.1	--	14.7	--
1981-85	12.9	13.5	12.5	--	13.0	--	14.4	--	14.7	--	13.7	--
1985-90	10.3	12.2	11.2	--	11.6	--	13.9	--	13.4	--	12.1	--
1965-79	9.2	12.3	11.2	--	10.2	--	16.3	--	18.6	--	13.2	--
1969-79	9.7	12.4	11.4	--	11.4	--	13.9	--	14.2	--	13.1	--
1979-85	11.9	13.9	12.8	--	13.5	--	14.6	--	14.8	--	14.0	--
1979-90	11.2	13.1	12.1	--	12.6	--	13.9	--	14.2	--	13.1	--

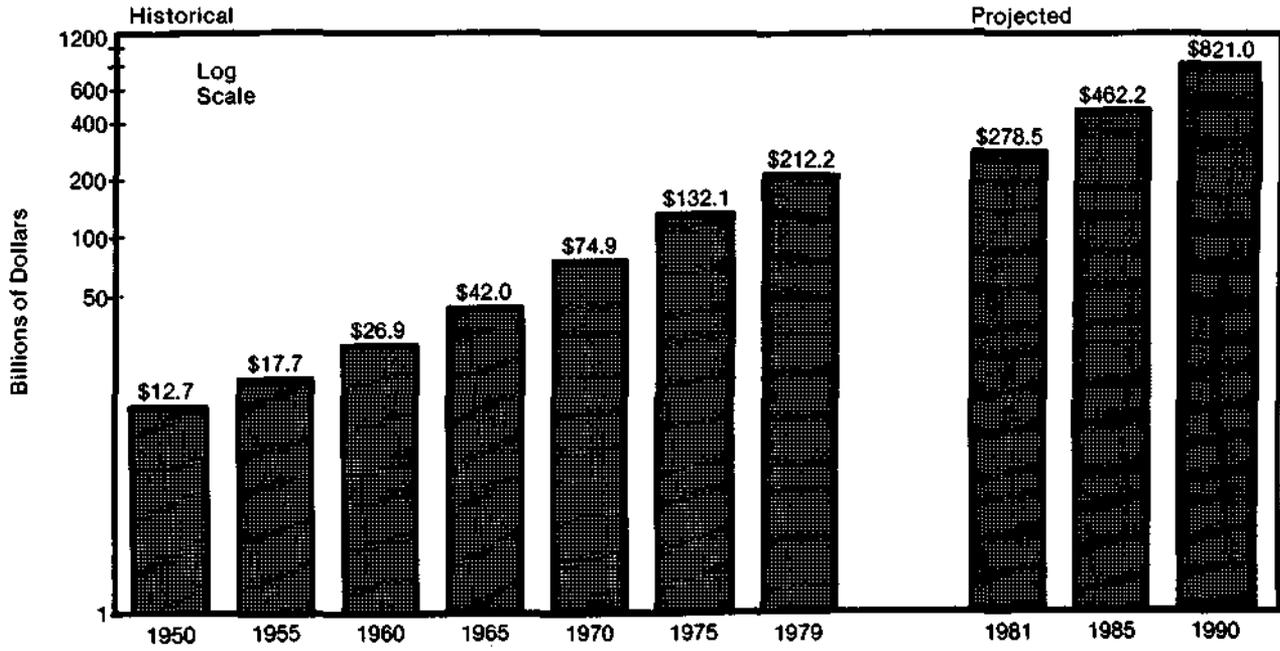
¹Robert M. Gibson, "National Health Expenditures, 1979" *Health Care Financing Review*, Summer 1980, p. 16. Data for selected years are unpublished.

²The Board of Trustees, Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds, *1980 Annual Report of the*

Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds, June 17, 1980. Alternative II (intermediate) economic assumptions were used.

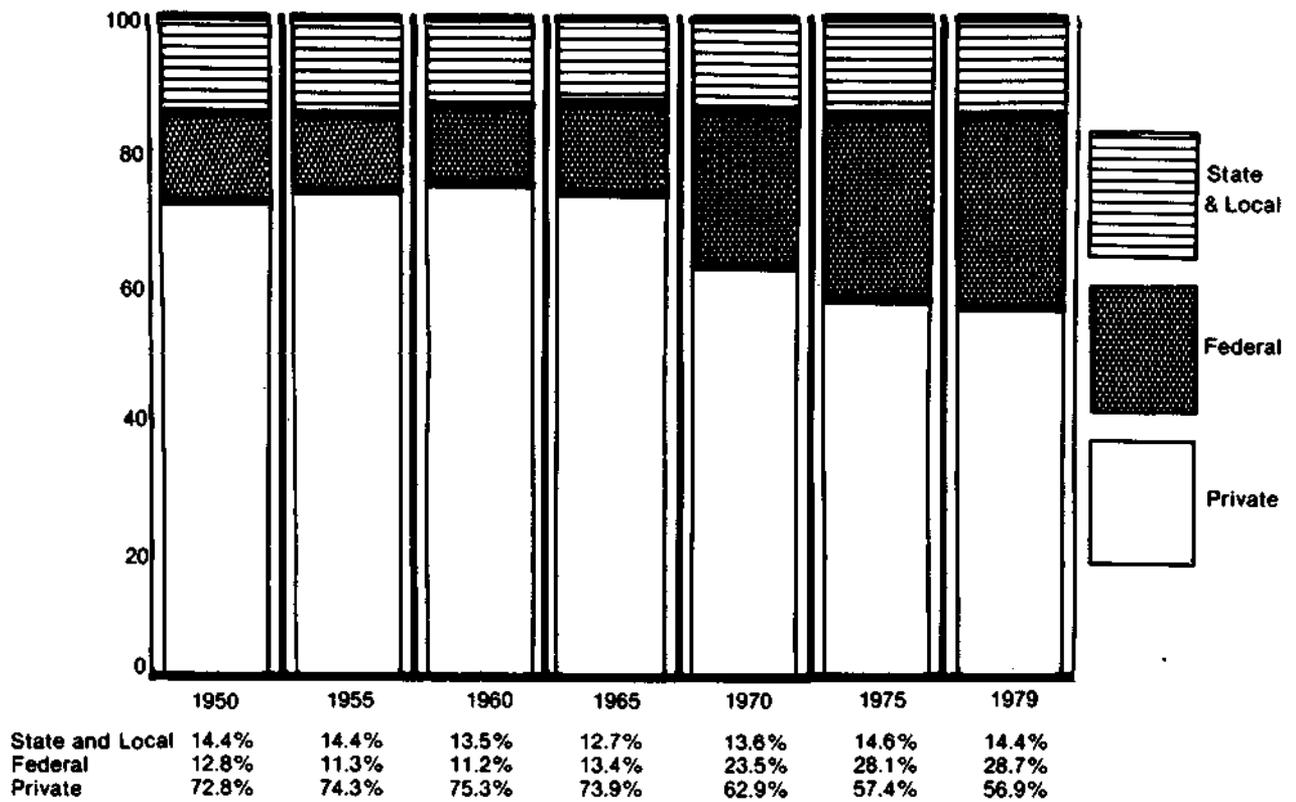
³Per Capita amounts in projections are rounded to the nearest dollar.

FIGURE 2
Total National Health Expenditures
Selected Years 1950 to 1990



Source: Office of Research, Demonstrations and Statistics
Health Care Financing Administration

FIGURE 3
Percent Distribution of Total National Health Expenditures by Source of Funds for Selected Years, 1950 to 1979



and the Federal-State and local Medicaid program shifted the burden of financing to public funding. In 1968, the Federal government financed 24 percent of national health expenditures; State and local governments financed 14 percent; and the private sector financed 62 percent. State and local governments have consistently financed 13-14 percent of national health expenditures for the period 1950 to 1979 (Table 6). By 1979, the Federal government financed 29 percent of national health expenditures and the private sector financed 57 percent. Assuming present trends continue, we project that the Federal government will finance 32 percent of national expenditures in 1990; the private sector, 54 percent; and State and local governments, 14 percent (Table 6).

Federal outlays for national health expenditures, which were \$1.6 billion in 1950, increased to \$5.6 billion in 1965 and to \$60.9 billion in 1979 (Table 6). Federal expenditures increased at an average annual rate of 18.6 percent from 1965 to 1979 (Table 6). During this same period, State and local expenditures increased at an average annual rate of 13.3 percent and private spending, 10.2 percent. The near-term outlook is for Federal expenditures to rise to \$80.7 billion in 1981, up from \$60.9 billion in 1979. We project that Federal expenditures will reach \$140 billion by 1985 and \$263 billion by 1990. We project that from 1979 to 1990 Federal outlays for national health expenditures will increase an average annual rate of 14.2 percent, the same rate as for the period 1969-1979, but considerably lower than the rate for 1965-1979 (Table 6).

We project that State and local outlays will be \$40 billion, \$67 billion, and \$119 billion in 1981, 1985, and 1990 respectively. The average annual rate of growth of State and local financed national health expenditures for the period 1979 to 1990 will be 13.1 percent, the same rate as for the period 1969-1979.

In 1950, funding of health expenditures accounted for 4.0 percent of total Federal expenditures (Figure 4A). This percent dropped during the late 1950's and early 1960's. By 1965, health expenditures comprised 4.5 percent of total Federal expenditures. This ratio increased to 8.6 percent in 1970, 10.4 percent in 1975, and 12.0 percent in 1979 (Figure 4A).

State and local expenditures for health (net of Federal transfers) as a proportion of total State and local government expenditures have been relatively stable from 1950 to 1979 (Figure 4B) ranging from a low of 7.1 percent in 1965 to a high of 9.2 percent in 1979.

General Factors Influencing Growth in Aggregate National Health Expenditure

Factors contributing to the rapid growth in national health expenditures are numerous and interrelated. The interplay of demand incentives and supply incentives contribute to the growth in specific types of medical expenditures. Two factors are particularly noteworthy; 1) a demand-side factor, the role of third-party payments in increasing consumer demand for services; and 2) a supply-side factor, the fee-for-service and cost-based reimbursement systems which lack incentives to provide medical care in the least expensive manner. Studies

correlate increases in medical care prices and expenditures not only to increased insurance coverage, but also to the level of such coverage (American Medical Association, 1978; Newhouse, 1978). As we approach the point where 100 percent of the consumers' cost is paid for by third parties, providers and consumers of medical care appear to increasingly treat medical care as a free service at the time of decision-making. For example, the hospital sector has a proportion paid out of pocket that has remained at approximately 9 percent, from 1968 through 1979, while hospital expenditures during this period have increased at an average annual rate of almost 14 percent.⁷

One of the factors contributing to the growth in insurance coverage is the provision of tax subsidies for health insurance (Congressional Budget Office, 1980b; Feldstein and Friedman, 1977; Greenspan and Vogel, 1980). These subsidies, that is, the exclusion of employer contributions to employee health insurance plans from taxable income and the deductibility of health insurance premiums, provide incentives to purchase more insurance than would otherwise be the case. The additional insurance then encourages further use of medical care.

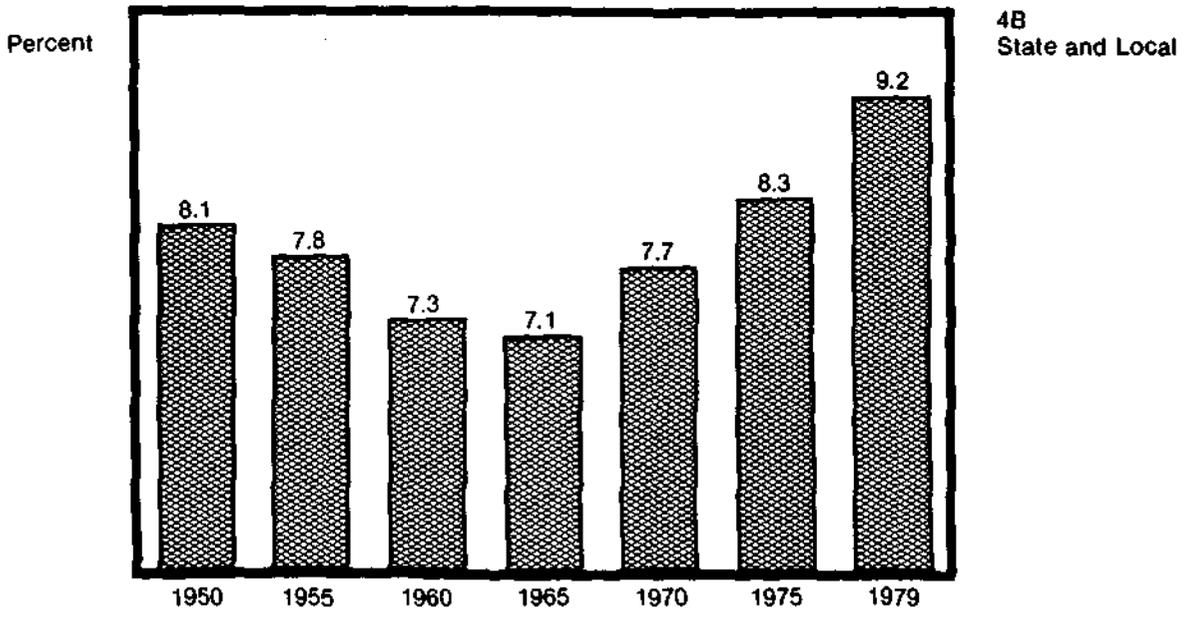
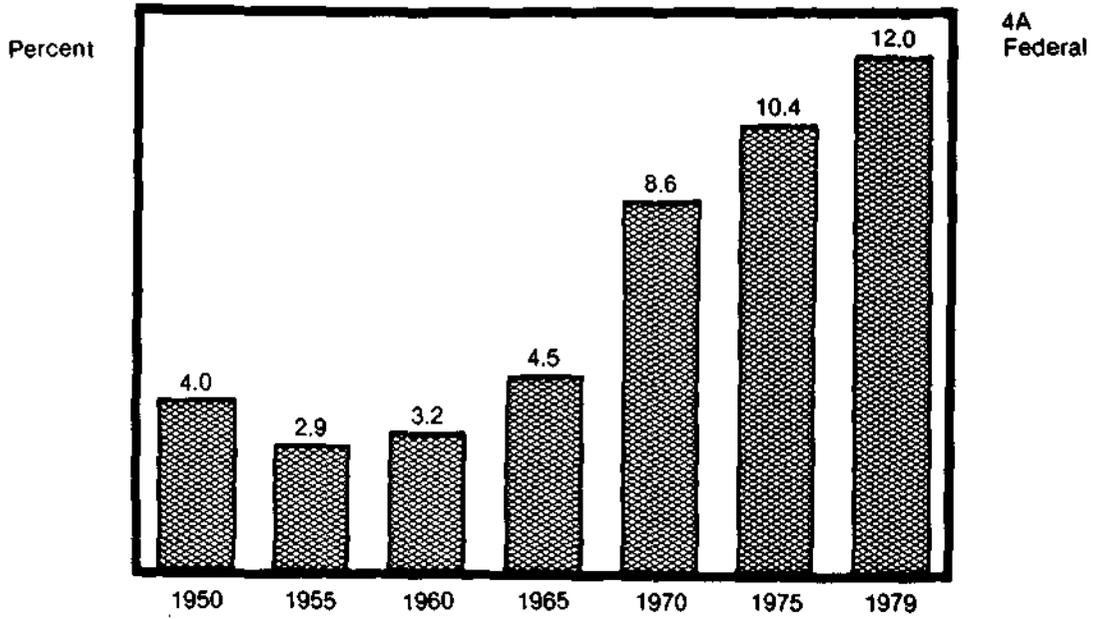
The third-party reimbursement systems themselves incorporate incentives to increase costs.⁸ Retrospective cost-based reimbursement for hospitals and fee-for-service reimbursement for physicians reward providers who supply larger quantities and more costly services with more revenues. An incentive is therefore provided to adopt new diagnostic and therapeutic procedures and techniques (product-innovative technologies) rather than to adopt new processes to more efficiently produce existing procedures and techniques (process-innovative technologies).⁹

⁷Numerous articles and monographs have been written to explain the rapid rise in health expenditures. Some of these are: Altman and Blendon, 1979; American Medical Association, 1978; Blumberg, 1979; Christianson and McClure, 1979; Enthoven, 1978a; Fedder, Holahan, and Marmor, 1980; Feldstein and Friedman, 1977; Feldstein and Taylor, 1977; Fuchs, 1979; Marmor, Wittman, and Heagy, 1976; Meyer, 1979; Moloney and Rogers, 1979; National Council on Health Planning and Development, 1980; Newhouse, 1978; U.S. Council on Wage and Price Stability, December, 1976; Virts, 1977; Wu and Zaidi, 1977; Zelten, 1979; and Zubkoff, 1975.

⁸A great deal of literature is available concerning the impact of our reimbursement systems on the use and cost of medical care. See Burney, Schieber, Blaxall, and Gabel, 1979; Delbanco, Meyers, and Segal, 1979; Enthoven, 1979; Enthoven, 1978b; Frech and Ginsburg, 1978; Gaus, Cooper, and Hirschman, 1976; General Accounting Office, September 18, 1980; Holahan, 1975; Holahan, Hadley, Scanlon, Lee, and Bluck, 1979; Schroeder and Showstack, 1978; Showstack, Blumberg, Schwartz, and Schroeder, 1979; Sloan and Steinwald, 1975; and Zelten, 1979.

⁹The relationship of technology to health care costs has stirred considerable debate. Related to this issue, see Altman and Blendon, 1979; Davis, 1974; Delbanco, Meyers, and Segal, 1979; Feldman, 1979; Feldstein, 1971a; Feldstein, 1977a; Fineburg and Hiatt, 1979; Freeland, 1978; Gaus and Cooper, 1979; Moloney and Rogers, 1979; Reiman, 1979; Russell, 1979; Schroeder and Showstack, 1978; Taylor, 1978; and Zelten, 1979.

FIGURE 4
Health Care Expenditures as a Percent of Government Expenditures
for Selected Years, 1950 to 1979



It has been alleged: that productivity levels in the health services sector are lower than in the overall economy; that the rate of increase in productivity is slower than in the private sector; and that significant increases can be made in current productivity levels.¹⁰ Mushkin, et al (1978) suggest that Baumol's model of unbalanced economic growth (1967) may have relevance for the health services sector. It can be paraphrased as follows: if productivity or output per manhour increases faster in the non-health sector than in the health sector, and wages increase at the same rate in both sectors, then unit costs in the health sector must increase faster than in the non-health sector. Fragmentary evidence on wages, prices, and productivity is consistent with such an application of Baumol's model.

Between 1972 and 1979,¹¹ wages increased 67 percent in both the health services sector and the total private economy (Bureau of Labor Statistics. *Employment and Earnings*). In this same period, the medical care services component of the Consumer Price Index (CPI) rose 19 percent faster than the CPI for all items less medical care.¹² Relatively high price increases in the health field, combined with an inelastic demand for medical care services (Newhouse and Phelps, 1976), contributed to the increase in expenditures for health care.

Another hypothesis relating to increasing health care expenditures is that physicians may be able to induce

some demand for their service.¹³ The patient's dependence upon the physician for technical decisions and the existence of third-party payments may provide the means for physicians to raise fees and increase services. According to the physician-induced demand and target-income models, increases in the number of physicians are associated with increases in expenditures for their services. This relationship becomes more important when the interaction of physicians' services and other related health services is noted (Blumberg, 1979; Pauly and Redisch, 1973; Redisch, 1979). Blumberg estimates that the physician influences approximately 70 percent of all personal health care expenditures. Thus, according to this hypothesis, the number of physicians is correlated not only with expenditures for physicians' services, but also with expenditures for hospital care, other professional services, drugs, and so forth.

Between 1965 and 1979, the number of active physicians increased at an average annual rate of 3.0 percent, triple the average annual rate for the population growth of 0.9 percent (Table 3). For the period 1979 to 1990, the Bureau of Health Professions projects that the number of active physicians will increase at an average annual rate of 2.7 percent, compared to a population growth rate of 0.9 percent (Table 3). This increase in the number of physicians is likely to be associated with increases in *per capita* and aggregate medical expenditures, especially for services significantly covered by third-party payments.

A last theory is that some services once provided for free by household members are now provided by health professionals (Fuchs, 1979). This factor contributes to growth in the health sector and is of particular importance for one of the fastest growing services, long-term care (Chiswick, 1976). One factor that contributes to this shift in providing services is the increasing proportion of females 16 years of age and over who are in the labor force. This proportion has increased from 39 percent in 1965 to 50 percent in 1978 (Council of Economic Advisors, 1980) and has resulted in a smaller number of persons available for productive, non-paying work in the household. Because more women are working, the opportunity cost of providing unpaid personal care services for relatives and friends has increased (Becker, 1976). In addition, the size of the average household decreased from 3.3 persons in 1965 to 2.8 in 1978, a decline of 15 percent (Bureau of Census, 1980). As average household size decreases due to social, economic,

¹⁰For studies and analyses which bear on the entire issue of productivity in the health services sector, see: Altman and Eichenholz, 1974; Applied Management Sciences, Inc., 1979; Bureau of Labor Statistics, 1974; *Business Week*, 1979b; Congressional Budget Office, 1980a; Enthoven, 1978a; Jeffers and Siebert, 1974; Medicus Systems, 1980; National Council on Health Planning and Development, 1980; Rafferty, 1977; Reder, 1969; Rachlin and Leveson, 1974; Schwartz and Joskow, 1978; and Sturm, 1967.

¹¹The earliest year for which data are available for average hourly earnings of employees in the health services sector is 1972 (Bureau of Labor Statistics, July 1979).

¹²Price data were used, rather than unit cost data, since cost data were not available for either the health services sector or for the total private economy. If the percent mark-up of unit prices over unit costs is constant over time, the growth in both prices and unit costs will be the same. The difficulty of measuring output in the health services sector (Reder, 1969) has hampered efforts to measure price changes for a fixed unit of service over time. Some factors, such as the increasing sophistication of care that cannot be separated from a "fixed" unit of service over time, may result in medical care price statistics being biased upward over time. Other factors, such as separating services and procedures into finer components and billing individually for each service or procedure, may result in medical care price statistics being biased downward over time. On these issues see Ginsburg, 1978; Showstack, Blumberg, Schwartz, and Schroeder, 1979; and Sobaski, Scitovsky, and McCall, 1975.

¹³Because of the overriding role physicians play in the health care delivery system and the unsettled questions relating to the association between changes in the number of physicians and changes in medical expenditures, several citations are listed: Cotterill, 1979; Dyckman, 1978; Evans, 1974; Fuchs, 1978; Fuchs and Kramer, 1972; Green, 1978; Hadley, Holahan, and Scanlon, 1979; Reinhardt, 1978; Sloan and Feldman, 1978; and Wilensky and Rossiter, 1979.

and demographic forces, there are fewer household members to provide personal care.

As more women join the labor force and as the average household size decreases, some long-term care activities have been "pushed" out of the household and into the health sector. It is also likely that increased third-party payments for coverage of health services have increased this trend.

Projection Trends by Type of Health Expenditures

In this section, we present highlights relating to projection trends for each of the 12 types of expenditures. First, we provide an historical perspective with commentary on factors influencing expenditure growth. Second, we present a synopsis of the short-term outlook and the long-term projections. Third, we include highlights of projections of sources of funds.

Hospital Care

Expenditures for hospital care comprise the largest category of health expenditures, accounting for 40 percent of national health expenditures in 1979 (Gibson, 1980).

Total hospital expenditures have increased from \$13.9 billion in 1965 to \$85.3 billion in 1979 (Table 8). These figures translate to an average annual rate of growth of 13.8 percent. Community hospital inpatient care is a major component of hospital care. During the last decade (1969-1979) community hospital inpatient expenses have risen from \$15.6 billion to \$59.1 billion, an average of 14.3 percent annually. Numerous factors accounted for this increase. The chief factor was overall inflation in the economy as measured by the GNP deflator, which accounted for about half of the expenditure growth (Figure 1A).

While inflation impacts on all sectors of the economy, we want to focus on the uniqueness of the hospital sector. Increases in hospital input prices (Freeland, Anderson and Schendler, 1979; Freeland, Schendler and Anderson, 1980) in excess of the GNP deflator accounted for 10.2 percent of the growth, nearly as much as the 12.3 percent contribution of growth in admissions *per capita*. Growth in total population accounted for 6.4 percent of the increase, with growth in real expenses per admission accounting for the remaining 21.9 percent. If we combine the factors specific to the industry: admissions *per capita*; intensity per admission (which includes such factors as nursing hours per case and diagnostic and therapeutic procedures per case); and hospital input prices in excess of the GNP deflator, they account for 44 percent of the growth. Of the growth in the hospital specific factors, growth in intensity per admission was significant, accounting for about 50 percent. The primary driving force behind the rapid rate of growth in the intensity of services is the demand for increased quality of care, which is facilitated by a high level of insurance coverage (low cost-sharing). The high level of insurance interacts with our retrospective cost-based reimbursement system, which lacks incentives to provide medical care in the least expensive manner (Feldstein, 1971a; Feldstein, 1977a; General Accounting Office, Sept. 19, 1980).

The short-term outlook is for hospital expenditures to rise from \$85 billion in 1979 to \$112 billion in 1981—an average annual rate of growth of 14.7 percent (Tables 8 and 9). Inpatient expenses per day in community hospitals are projected to rise from \$226 in 1979 to \$288 in 1981. Expenses per inpatient stay are projected to rise from \$1,618 in 1979 to \$2,046 in 1981 (Table 7). By 1985, inpatient expenses per admission are projected to exceed \$3,300.

Long-term projections for total hospital expenditures are that by 1985 expenditures will be approximately \$190 billion, and by 1990 these expenditures will reach \$355 billion. We project that *per capita* hospital expenditures will be \$798 in 1985 and \$1430 by 1990.

TABLE 7
Expenses per Inpatient Day and per Inpatient Stay, Community Hospitals, Selected Years 1965-1990¹

Year	Expenses per Inpatient Day ²	Expenses per Inpatient Stay ²
<u>Historical</u>		
1965	\$41.35	\$315.13
1970	77.88	608.38
1975	137.74	1,016.81
1979	226.46	1,617.73
<u>Projections</u>		
1981	288.00	2,046.00
1985	485.00	3,318.00
1990	890.00	5,914.00
<u>Average Annual Percent Increases for Selected Periods</u>		
1965-70	13.5%	14.1%
1970-75	12.1	10.8
1975-79	13.2	12.3
1979-81	12.7	12.5
1981-85	13.9	12.9
1985-90	12.9	12.3
1965-79	12.9	12.4
1979-85	13.5	12.7
1979-90	13.2	12.5

¹ Historical data are from American Hospital Association "Hospital Indicators," *Hospitals* (National Hospital Panel Survey).

² Costs are adjusted to eliminate expenses associated with outpatient care.

³ See comments in Technical Note in the section "Hospital Care: Community Hospital Inpatient."

Physicians' Services

Expenditures for physicians' services have risen from \$12.6 million in 1969 to \$40.6 million in 1979 (Table 8), at a 12.4 percent average annual rate. During this last decade, increases in overall inflation (GNP deflator)

TABLE 8
National Health Expenditures by Type of Expenditure, Selected Years, 1929-1990

	Historical Estimates, Year ¹											
	1929	1940	1950	1955	1960	1965	1966	1967	1968	1969	1970	1971
	Amount (in millions)											
Total	\$3,649	\$3,987	\$12,662	\$17,745	\$26,895	\$41,994	\$46,389	\$51,939	\$58,456	\$65,988	\$74,903	\$83,112
Health Services and Supplies	3,436	3,668	11,702	16,884	25,185	38,551	42,772	48,180	54,403	61,236	69,583	77,066
Personal Health Care	3,202	3,548	10,885	15,893	23,680	36,000	39,853	44,890	50,766	57,276	65,372	71,979
Hospital Care	863	1,011	3,851	5,900	9,092	13,885	15,662	18,251	21,019	24,018	27,799	30,769
Physicians' Services	1,004	973	2,747	3,689	5,684	8,473	9,175	10,142	11,104	12,648	14,340	15,918
Dentists' Services	482	419	961	1,508	1,977	2,809	2,964	3,380	3,673	4,197	4,750	5,068
Other Professional Services	252	174	396	562	882	1,033	1,159	1,258	1,424	1,471	1,585	1,828
Drugs and Medical Sundries ²	606	637	1,726	2,384	3,657	5,212	5,584	5,984	6,674	7,383	8,208	8,688
Eyeglasses and Appliances	133	189	491	604	776	1,211	1,466	1,506	1,754	1,874	1,926	1,970
Nursing Home Care	—	33	187	312	526	2,072	2,356	2,776	3,380	3,805	4,697	5,635
Other Health Services	62	112	526	924	1,106	1,306	1,486	1,612	1,739	1,880	2,058	2,323
Prepayment & Administration	139	167	456	624	1,091	1,738	2,093	2,402	2,592	2,731	2,791	3,321
Government Public Health Activities	96	153	361	377	414	814	825	888	1,045	1,229	1,420	1,764
Research and Construction of Medical Facilities	213	119	960	861	1,710	3,443	3,617	3,759	4,063	4,752	5,320	6,047
Research	—	3	117	210	662	1,446	1,555	1,695	1,801	1,835	1,889	2,040
Construction	213	116	843	651	1,048	1,997	2,062	2,064	2,252	2,917	3,431	4,007

	Historical Estimates, Year ¹								Projections		
	1972	1973	1974	1975	1976	1977	1978	1979	1981	1985	1990
	Amount (in millions)								Amount (in millions)		
Total	\$83,501	\$103,045	\$116,284	\$132,120	\$146,872	\$169,875	188,643	\$212,199	\$278,543	\$462,229	\$821,017
Health Services and Supplies	86,994	96,291	108,907	123,822	138,823	160,794	179,113	202,318	266,618	444,575	794,590
Personal Health Care	80,177	88,688	101,007	116,522	131,276	147,968	166,627	188,551	248,686	440,288	731,438
Hospital Care	34,974	38,673	44,769	52,141	59,808	67,721	75,842	85,342	112,277	189,528	355,069
Physicians' Services	17,162	19,075	21,245	24,932	27,565	31,852	35,082	40,599	52,862	87,494	150,319
Dentists' Services	5,625	6,531	7,366	8,237	9,448	10,535	11,894	13,607	18,054	29,863	52,022
Other Professional Services	1,802	1,973	2,230	2,619	3,202	3,566	4,080	4,687	6,343	10,858	19,139
Drugs & Medical Sundries ²	9,344	10,050	11,036	11,813	12,781	13,987	15,374	16,975	20,636	29,581	44,434
Eyeglasses and Appliances	2,215	2,480	2,707	2,982	3,219	3,491	3,945	4,353	5,333	7,986	12,559
Nursing Home Care	6,457	7,217	8,567	10,105	11,390	12,810	15,102	17,807	24,485	44,565	81,788
Other Health Services	2,597	2,690	3,088	3,692	3,863	4,006	4,587	5,180	6,652	10,365	16,371
Prepayment & Administration	4,811	5,370	5,189	4,143	4,734	8,511	7,202	7,720	11,629	18,872	32,441
Government Public Health Activities	2,006	2,233	2,731	3,157	3,813	4,316	5,284	6,047	8,295	15,303	30,289
Research and Construction of Medical Facilities	6,508	6,754	7,377	8,298	9,049	9,081	9,529	9,882	11,922	17,648	26,421
Research	2,267	2,438	2,702	3,239	3,635	3,809	4,323	4,615	5,814	9,054	14,381
Construction	4,241	4,316	4,675	5,059	5,414	5,272	5,206	5,267	6,108	8,594	12,040

¹Robert M. Gibson, "National Health Expenditures, 1979" *Health Care Financing Review*, Summer 1980, pp. 21-22. Data for some years are unpublished.

²Research and development expenditures of drug companies

and other manufacturers and providers of medical equipment and supplies are excluded from "research expenditures," but are included in the expenditure class in which the product falls.

accounted for more than half of the increase in expenditures (Figure 1B). Increases in the CPI for physicians' fees in excess of the GNP deflator accounted for 10.4 percent of the expenditure growth. Growth in visits *per capita* (Technical Note) accounted for 11 percent, and growth in real expenses per visit accounted for 15 percent. One example of the growth in real services is the out-of-hospital laboratory test. Excluding x-rays and radiation therapy, out-of-hospital laboratory tests increased from 850 million to 1.5 billion between 1972 and 1977, or at an average annual rate of 12.0 percent (Gibson, 1980; also see *Laboratory Management*, 1979). Another example of growth in services is that the number of surgical operations increased from 13.7 million to 18.6 million from 1969 to 1979, an average annual rate of growth of 3.1 percent (American Hospital Association, National Hospital Panel Survey). This increase in intensity of services is caused in part by growth in insurance coverage and the fee-for-service reimbursement system (Delbanco, *et al.*, 1979; Showstack, *et al.*, 1979; Sloan and Feldman, 1975).

Between 1965 and 1979 the number of active physicians increased at an average annual rate of 3.0 percent. In the projected period, the rate is slightly less. The effect of projected increases in active M.D.s and D.O.s (Bloom 1980) (Table 3) on prices, use of services, distribution by speciality, incomes, geographic distribution, and so forth, is under current study (Bureau of Health Manpower, 1978; Cantwell, 1980; Graduate Medical Education National Advisory Committee, 1980; Hendrickson, 1980; Lamson-Griffiths Associates, 1980; McKinsey and Company, Inc., 1975; *Medical Economics*, 1980; Scheffler, *et al.*, 1979; Weber, 1980). During the 1968-1978 period real *per capita* expenditures for physicians' services rose at an average annual rate of 3.4 percent (Table 10); and real services per physician declined 0.8 percent per year on the average (Table 10). These data

seem to suggest that the large increase in the number of active physicians relative to population has been associated with more real services provided *per capita*, but that less services per physician were provided. Research needs to be done on this finding.¹⁴

The increasing incidence of malpractice suits in the 1970s has affected expenditures in two ways (Greenspan, 1979; Henderson, 1979, Rottenberg, 1978): 1) fees were raised to reflect increased costs from higher malpractice insurance premiums, and 2) the quantity of services provided increased as physicians became more thorough in response to the threat of malpractice suits. In the projected period, this threat will continue to be a factor in physicians' practice costs but may not be as significant a cost determinant as it was in the 1970s.

The short-term outlook is for expenditures for physicians' services to rise from \$40.6 billion in 1979 to \$52.9 billion in 1981 (Table 8).

For the longer term, we project that expenditures for physicians' services will reach \$87 billion in 1985 and \$150 billion in 1990. The projected average annual rate of growth for the period 1979-1990 is 12.6 percent, slightly more than during the historical period 1965-1979, 11.8 percent.

¹⁴It is also notable that while average net income from medical practice rose at an average annual rate of 5.8 percent in nominal terms (Table 10), real income—after adjusting for the all items CPI—declined at an average annual rate of -0.7 percent. Average total tax deductible professional expenses per physician increased an average annual rate of 8.9 percent, faster than the growth in the CPI for all items. A portion of the relatively fast growth in expenses and slow growth in net income may reflect that physicians are putting increasing amounts of their income into deferred compensation pension programs. Thus, what formerly was included as net income is included as professional expenses, (American Medical Association, 1980).

TABLE 9
National Health Expenditures, Average Annual Percent Changes, by Type of Expenditure, Selected Periods, 1950-1990

	1950-55	1955-60	1960-65	1965-70	1970-75	1975-79	1979-81	1981-85	1985-90	1965-79	1969-79	1979-85	1979-90
Total	7.0	8.7	9.3	12.3	12.0	12.6	14.6	13.5	12.2	12.3	12.4	13.9	13.1
Health Services and Supplies	7.6	8.3	8.9	12.5	12.2	13.1	14.8	13.6	12.3	12.6	12.7	14.0	13.2
Personal Health Care	7.6	8.3	8.7	12.7	12.3	12.8	14.4	13.6	12.3	12.6	12.7	13.8	13.1
Hospital Care	8.9	9.0	8.8	14.9	13.4	13.1	14.7	14.0	13.4	13.8	13.5	14.2	13.8
Physicians' Services	6.1	9.0	8.3	11.1	11.7	12.9	14.1	13.4	11.4	11.8	12.4	13.7	12.6
Dentists' Services	9.4	5.6	7.3	11.1	11.6	13.4	15.2	13.4	11.7	11.9	12.5	14.0	13.0
Other Professional Services	7.3	8.9	3.7	9.1	10.4	15.7	16.3	14.4	12.0	11.4	12.3	15.0	13.6
Drugs and Medical Sundries	6.7	8.9	7.3	9.5	7.6	9.5	10.3	9.4	8.5	8.8	8.7	9.7	9.1
Eyeglasses and Appliances	4.2	5.1	9.3	9.7	9.1	9.9	10.7	10.6	9.5	9.6	8.8	10.6	10.1
Nursing Home Care	10.8	11.0	1	17.8	16.6	15.2	17.4	16.1	12.9	16.6	16.7	16.5	14.9
Other Health Services	11.9	3.7	3.4	9.5	12.4	8.8	13.3	11.7	9.6	10.3	10.7	12.3	11.0
Prepayment and Administration	6.5	11.8	9.7	10.0	8.2	16.8	22.8	13.0	11.4	11.2	11.0	16.2	14.1
Government Public Health													
Activities	0.9	1.9	14.5	11.8	17.3	17.6	17.1	16.5	14.6	15.4	17.3	16.7	15.8
Research and Construction of													
Medical Facilities	-2.2	14.7	15.0	9.1	9.3	4.5	9.8	10.3	8.4	7.8	7.6	10.1	9.4
Research	12.4	25.8	16.9	5.5	11.4	9.3	12.2	11.7	9.7	8.6	9.7	11.9	10.9
Construction	-5.0	10.0	13.8	11.4	8.1	1.0	7.7	8.9	7.0	7.2	6.1	8.5	7.8

¹ Expenditures for nursing home care were revised for the period beginning 1965. Time-series data for 1960 through 1965 are not consistent.

TABLE 10
Average Income Per Physician and Per Capita Expenditures for Physicians' Services, Nominal and Real, 1968 and 1978

	Year		Average Annual Percent Increases
	1968	1978	
Per Capita Expenditures for Physicians Services ¹	\$54.36	\$160.47	11.4%
Per Capita Expenditures for Physicians' Services Deflated by the CPI for Physicians' Services	\$51.48	\$71.93	3.4
Average Gross Income per Physician ²	\$57,152	\$111,900	7.0
Average Gross Income per Physician Deflated by the CPI for Physicians' Services	\$54,121	\$50,157	-0.8
Average Total Tax Deductible Professional Expenses per Physician ²	\$19,780	\$46,400	8.9
Average Total Tax Deductible Professional Expenses per Physician Deflated by the CPI for All Items	\$18,983	\$23,722	2.3
Average Net Income from Medical Practice per Physician ²	\$37,372	\$65,500	5.8
Average Net Income from Medical Practice per Physician Deflated by the CPI for All Items	\$35,866	\$33,487	-0.7
CPI for Physicians' Services (1967=100.0)	105.6	223.1	7.8
CPI for All Items (1967=100.0)	104.2	195.6	6.5
CPI for Physicians' Services Deflated by CPI for All Items (1967=100.0)	101.3	114.1	1.2

¹Robert M. Gibson, "National Health Expenditures, 1979", *Health Care Financing Review*, Summer 1980.

²American Medical Association, *Profile of Medical Practice*, AMA Center for Health Services Research and Development, 1972 and 1980 editions.

Dentists' Services

Expenditures for dentists' services grew from \$2.8 billion in 1965 to \$13.6 billion in 1979, almost a five-fold increase, and an average annual increase of 11.9 percent (Table 9). During this same period, the number of active dentists increased at an average annual rate of 1.8 percent (Table 3), double the annual rate of population growth (Table 1).

From 1969 to 1979 dentists' fees accounted for more than half of the expenditure growth for dentists' services (Figure 1C) and grew at the same rate as the GNP deflator, averaging 6.7 percent annually. In contrast, the CPIs

for physicians' services and overall services, less rent, each rose at an average annual rate of 8.0 percent for this period. The relatively better price performance of the dental service sector compared to these other two sectors may in part reflect an interaction of: better productivity performance (P. Feldstein, 1974; Medicus Systems, 1980); competitive forces within the industry; and the large influx of new dentists (Bureau of Health Manpower, March 1979; Douglas and Cole, 1979; Lendio, 1980; Millenson, 1980; and Waldman, 1980).

Intensity of services per visit, which includes providing more services and procedures per visit (for example, use of high speed drills increases the average number of cavities which can be filled during one visit) as well as shifts in the mix of services and procedures (for example, a higher proportion of expensive procedures such as orthodontics), accounted for 26.5 percent of expenditure growth in the last decade. Growth in intensity accounted for substantially more of the growth in expenditures for dentists' services than growth in both population and visits *per capita* combined (Figure 1C).

In the short-term, projected expenditures for dentists' services are expected to rise from \$13.6 billion in 1979 to \$18 billion in 1981 (Table 8), an average annual rate of growth of 15.2 percent. High increases for dentists' fees, as measured by the CPI, fueled the increase for 1980 and are likely to make a substantial contribution to expenditure growth in 1981. The number of active dentists is projected to rise from 123,500 in 1979 to 130,100 in 1981 (Table 3). Long-term projections are for expenditures for dentists' services to reach \$30 billion by 1985 and \$52 billion by 1990 (Table 8). The number of active dentists is projected to increase at an average annual rate of 2.2 percent for the period 1979 to 1990 (Table 3). In contrast, the number of active dentists grew at an average annual rate of 1.8 percent during the period 1965 to 1979. Private health insurance benefits for dentists' services (Carroll and Arnett, 1979) are projected to continue to finance an increasing share of expenditures (Table 5) (American Dental Association, 1979). This rate of increase is likely to slow over the next decade.

Other Professional Services

Expenditures for other professional services (for example, optometrists, podiatrists, chiropractors, private-duty nurses, and home health agency services which are not hospital-based) have grown from 1.0 billion in 1965 to 4.7 billion in 1979 (Table 8), at an average annual rate of growth of 11.4 percent (Table 9). The use of home health services by the aging population is a factor contributing to the growth in expenditures for this service.

We project that expenditures for other professional services will reach \$6.3 billion in 1981, \$10.9 billion in 1985 and \$19.1 billion by 1990 (Table 8). We also project that consumer out-of-pocket payments (direct) will continue to fund the majority of expenditures for other professional services (Table 10).

Drugs and Medical Sundries

Expenditures for drugs and medical sundries have grown from \$5.2 billion in 1965 to \$17.0 billion in 1979 (Table 8). This reflects an average annual rate of increase of 8.8 percent.

The pharmaceutical preparations industry (Bureau of Labor Statistics, December 1979) and the drugstore industry (Friedman, 1980) are notable for extraordinary productivity increases (Brand, 1974; Cocks, 1974; Cocks, 1977). From 1965 to 1973, output per hour increased at an average annual rate of 4.8 percent for all persons in the pharmaceutical preparations industry and 6.4 percent for all employees in the drugstore industry (Figure 5). For the most recent 5-year period, 1973-1978, productivity increased at significantly lower rates for both industries, 3.4 percent average annual rate for pharmaceutical preparations and 0.8 percent average annual rate for drugstores.

Prices of drugs at both the producer and consumer levels of distribution have risen at rates significantly lower than the overall inflation rate for the period 1965-1978.¹⁵ During this period the implicit price deflator for GNP rose at an average annual rate of 5.7 percent, whereas producer prices for drugs (*Producer Prices and Price Indexes*, Code 063, drugs and pharmaceuticals) rose at an average annual rate of 3.0 percent, and consumer prices (*CPI Detailed Report*, medical care commodities) rose at an average annual rate of 2.8 percent. Thus, after adjusting for inflation, producer prices decreased at an average annual rate of -3.3 percent per year and consumer prices decreased at an average annual rate of -3.5 percent per year (Figure 5). On average, the rate of productivity increases has been negatively associated with the rate of price increases. The relationship of productivity increases and real drug price decreases may have been lessened, beginning in 1974, by the higher price increases for energy-dependent raw materials used for drug manufacturing and packaging. Research needs to be done to quantify cause and effect relationships between productivity and prices.

The short-term outlook is for expenditures for drugs and medical sundries to rise to \$20.6 billion in 1981, an average annual rate of increase of 10.3 percent for the period 1979-1981. For the longer term, expenditures are projected to reach \$30 billion in 1985 and \$44 billion in 1990.

In 1979 private health insurance benefits financed 7.9 percent of outlays for drugs and medical sundries (Gibson, 1980) and the public sector financed another 8.4 percent, leaving 83.7 percent financed by direct consumer payments. The projections assume moderate growth in private health insurance coverage and assume no significant expansion of benefits through a national health insurance program (Trapnell, 1979).

Eyeglasses and Appliances

Expenditures for eyeglasses and orthopedic appliances have increased from \$1.2 billion in 1965 to \$4.4 billion in 1979 (Table 8), or at an average annual rate of growth of

¹⁵Since 1974 drug prices have increased at about the same rate as overall inflation.

9.6 percent (Table 9). These expenditures are primarily for eyeglasses.

Compared to most health services and supplies industries, this industry is quite competitive (Benham, 1972; Feldman and Begun, 1978), as evidenced by its considerable price competition and advertising. Direct, out-of-pocket payments accounted for 87 percent of outlays for eyeglasses and appliances in 1979 (Gibson, 1980). Thus, public and private insurance play a small role in consumer demand for these services. These factors appear to be reflected in pricing behavior in the industry. For the period 1965-1977,¹⁶ the Consumer Price Index for Examining, Prescribing and Dispensing of Eyeglasses increased at an average annual rate of 5.1 percent while the GNP deflator increased 5.5 percent. Thus, after accounting for overall inflation in the economy, the CPI for this sector decreased at an average annual rate of -0.4 percent.

The short-term outlook is for expenditures for eyeglasses and appliances to grow at an average annual rate of 10.7 percent from 1979 to 1981, reaching \$5.3 billion in 1981. We project that expenditures will reach \$8 billion in 1985 and \$12.6 billion in 1990.

We project that private health insurance benefits will increase slightly faster than outlays in total for this sector (Table 4), thus financing a higher proportion of the expenses.

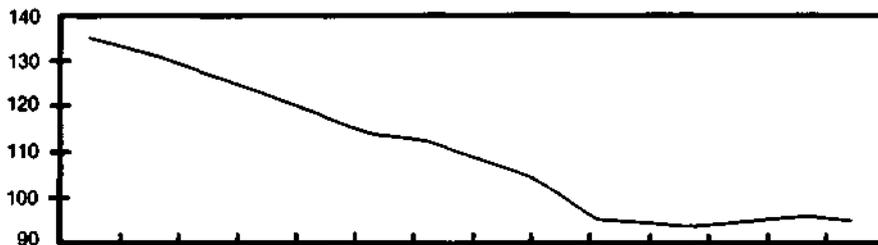
Nursing Home Care

Expenditures for nursing home care increased at an average annual rate of 16.6 percent for the period 1965 to 1979 (Table 9). This growth was due to the interplay of demand and supply factors. Demand factors include: demographic shifts toward the aged (Table 2); growth in real income; expanded Medicaid benefits; and the "transfer" of patients from mental hospitals to nursing homes. Supply factors include: the increase in number of nursing home beds; and increases in prices paid for inputs (Bassak and Gerson, 1978; Bishop, 1980; Chiswick, 1976; Congressional Budget Office, August 1977; Congressional Budget Office, February 1977; Dunlop, 1978; Fisher and Schendler, 1980; Fuchs, 1979; General Accounting Office, November, 1979; Liu and Mossey, 1980; Scanlon, 1978).

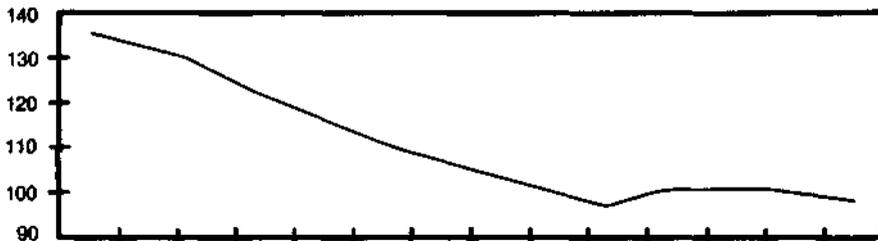
We can account for growth of nursing home expenditures during the period 1969-1979, in terms of the five factors, as follows: growth in nursing home days per capita accounted for 32 percent; growth in the GNP deflator accounted for 45 percent; growth in total population and nursing home input prices in excess of the GNP deflator each accounted for about 5 percent; and growth in real expenses per day (intensity) accounted for 13 percent (Figure 1D). Growth in real expense per day crudely measures increased nursing services and the costs of meeting stricter regulations for the safety and health of nursing home patients. Cost-pressure, as reflected in price increases for the inputs that nursing homes purchase accounted for 49.2 percent of the growth in expenditures—44.5 percent associated with overall inflation in the economy and 4.7 percent for nursing home input prices in excess of overall inflation.

¹⁶1977 is the last calendar year for which a continuous CPI time series is available for eyeglasses and related services.

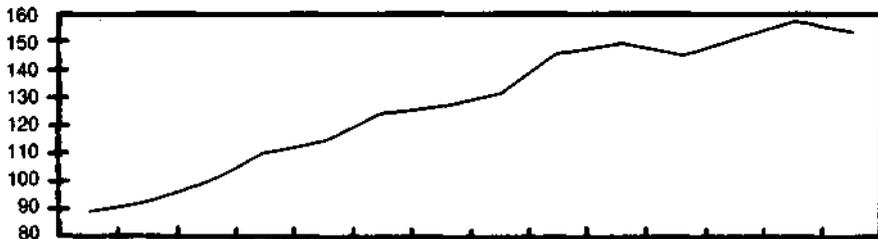
FIGURE 5
Drug Industry Trends for Productivity and Inflation-Adjusted Prices
(Producer and Consumer), 1965-1978



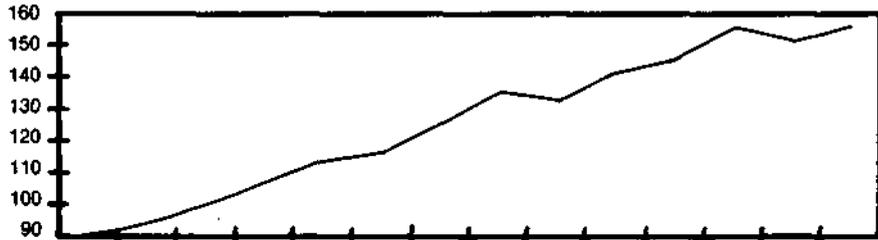
CPI—Drugs (Consumer Prices Deflated by Implicit Price Deflator for GNP)



PPI—Drugs (Producer Prices Deflated by Implicit Price Deflator for GNP)



Productivity—Output per Employee Hour for the Drugstore Industry (1967 = 100.0)



Productivity—Output per Employee Hour for the Pharmaceutical Preparations Industry (1967 = 100.0)

	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
CPI	134.9	130.9	126.7	121.3	116.8	113.2	109.8	105.8	100.1	94.5	93.4	94.2	94.6	94.4
PPI	135.1	130.9	126.6	120.6	115.2	110.7	106.7	103.0	98.6	97.2	99.5	100.2	99.2	97.4
Productivity—Drug Store Industry	89.3	93.0	100.0	110.2	114.4	124.4	126.9	131.7	146.2	149.4	144.8	150.6	156.7	152.4
Productivity—Pharmaceutical F.	90.9	94.1	100.0	106.3	113.4	116.2	125.7	134.9	132.1	141.3	145.4	155.4	151.3	156.1

The short-term outlook is for nursing home care expenditures to rise from \$17.8 billion in 1979 to \$24.5 billion in 1980, an average annual rate of increase of 17.4 percent. The higher prices paid for inputs to produce nursing home services and demographic factors (Fisher and Schendler, 1980) (Table 2) account for most of the increases. For the long term, we project that expenditures will rise to \$44.6 billion in 1985 and \$81.9 billion in 1990.

The proportion of nursing home care expenditures financed by third parties is assumed to have stabilized at approximately 60 percent. The out-of-pocket portion of expenses is assumed to be financed by Social Security and private pension payments, investment income, savings, assets, and contributions from friends and relatives.

Other Health Services

Other health services is a catch-all category which captures residual amounts of public program expenditures that are not classified elsewhere. It includes: (1) care provided in Federal units other than hospitals; (2) School health services; and (3) industrial in-plant services (Gibson, 1980). Expenditures for other health services have grown from \$1.3 billion in 1965 to \$5.2 billion in 1979 (Table 8) at an average annual growth rate of 10.3 percent. We project that expenditures for other health services will reach \$6.7 billion by 1981, \$10.4 billion in 1985, and \$16.4 billion in 1990.

Prepayment and Administration

Expenses for prepayment and administration include three components: 1) prepayment costs (including operating expenses) of private health insurance organizations, 2) administrative expenses of Federally financed health programs, and 3) nonpersonal health expenditures of private voluntary health organizations for health education, lobbying, fund raising, etc. (Gibson, 1980).

For private health insurance organizations, prepayment costs reflect the difference between the premiums (subscription income) and benefit payments (claims) and represents the net cost to the consumer. This amount is retained by private health insurance organizations for additions to reserves, profits, and operating expenses. The operating expense component is a function of the size of the enrolled population and the incidence of claims per enrollee. Operating expenses as a proportion of benefit payments are higher for processing small claim amounts such as those associated with benefits for out-of-hospital physicians' services, dentists' services, eyeglasses, and drugs. Growth in wage rates paid to employees in this industry (see Technical Note) also contributes significantly to operating expense increases. Productivity improvements associated with automation offset a portion of the operating expense increases (Bureau of Labor Statistics, 1965; Bureau of Labor Statistics, 1979). The additions to the reserves and profits component are volatile and cyclical. It is hazardous to project this component since both the length of the cycle and the depth of the cycle are variable.

Prepayment and administration expenses have risen from \$1.7 billion in 1965 to \$7.7 billion in 1979 (Table 8).¹⁷ Prepayment and administration expenses are projected to reach \$11.6 billion in 1981, \$19 billion in 1985 and \$33 billion in 1990 (Table 8).

Government Public Health Activities

Expenditures for government public health activities have risen from \$0.8 billion in 1965 to \$6.0 billion in 1979 (Table 8). This reflects an average annual rate of growth of 15.4 percent. During this period the portion provided by State and local governments has risen from 58 percent in 1965 to 78 percent in 1979 (Table 4). The short-term outlook is for expenses for government public health activities to rise to \$8.3 billion by 1981, an increase of 2.3 billion since 1979. Expenses are projected to reach \$15.3 billion in 1985 and \$30.3 billion in 1990.

Research

Expenditures for medical research have risen from \$1.4 billion in 1965 to \$4.6 billion in 1979 (Table 8). This reflects an average annual rate of growth of 8.6 percent (Table 9).

During this same period, *per capita* expenditures for medical research, deflated by the biomedical research and development index (National Institutes of Health, 1977, 1980), increased at an average annual rate of 1.3 percent per year. Real *per capita* GNP increased at an average annual rate of 2.3 percent per year during this same period. Thus, in real terms, medical research is getting a smaller proportion of GNP. Historically, movements in real medical research expenditures are associated with movements in real GNP.

In the short-term, we project that expenditures for medical research will increase to \$5.8 billion in 1981, up from \$4.6 billion in 1979. For the longer term, expenditures are projected to reach \$9.1 billion in 1985 and \$14.4 billion in 1990. In 1979 the Federal government financed nearly 85 percent of research expenditures (Gibson, 1980). We project that the Federal expenditures will rise faster than private and State and local expenditures (Table 4). Thus, the Federal share is projected to slowly increase, reflecting historical trends.

Construction of Medical Facilities

Expenditures for construction of medical facilities have risen from \$2.0 billion in 1965 to \$5.3 billion in 1979 (Table 8). This reflects an average annual rate of growth of 7.2 percent (Table 9). In real terms, total construction

¹⁷Due to the cyclical nature of prepayment and administrative expenses (caused by the changes in reserves and profits component of prepayment costs) caution must be exercised in interpreting average annual growth rates. Use of slightly different time periods can result in significantly different average annual rates of growth. The period 1965 to 1979 reflects a relatively high point on this cycle in 1965 and a relatively low point in 1979. 1990 is projected as an average point on the cycle.

expenditures were about the same in 1979 as they were in 1965 (Figure 6).

The short-term outlook is for nominal construction expenditures to rise to \$6.1 billion in 1981, up from \$5.3 billion in 1979. Growth in real medical facilities construction is expected to be negative for the period 1979 to 1981. This negative real growth is consistent with the projections made by Dodge Construction Potentials (Christie, 1980). That company projected negative growth in new construction (as measured by millions of square feet of floor area) for the hospital and health sector for the period 1979-1981. Projected expenditures for construction will reach \$8.6 billion in 1985 and \$12 billion in 1990.

Summary and Discussion

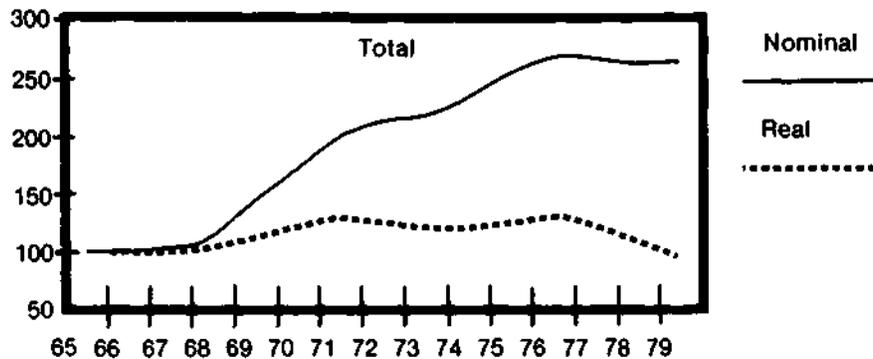
Projections of national health expenditures by type of expenditures and source of finance have been presented for 1981, 1985 and 1990. The projections assumed, among other factors, that historical trends and relation-

ships will continue and that neither a mandatory cost containment program nor national health insurance will be in effect. These baseline projections incorporated the Health Care Financing Administration's projections of Medicare benefit outlays and total community hospital inpatient expenses; the Bureau of Health Professions' projections of active physicians and dentists; and the 1980 Board of Trustees' (Federal Old-Age and Survivors Insurance and Disability Insurance Trusts) projections of the GNP and overall inflation.

There are significant implications for the economy as the health sector continues to absorb larger percentages of the GNP. The major one is that, as more labor and capital are drawn into the health sector, relatively fewer resources are available for producing goods and services in other sectors (Cameron and Kirkland, 1980).

There seem to be few demand or supply incentives to significantly retard the growth of health expenditures under current institutional arrangements. As health costs increase, so does the risk of financial burden to consumers with inadequate health insurance coverage. As

FIGURE 6
Index of Nominal and Real Expenditures for Construction of Medical Facilities, 1965 to 1979 (1965 = 100.0)



	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
Nominal	100.0	103.3	103.4	112.8	146.1	171.8	200.7	212.4	216.1	234.1	253.3	271.1	264.0	260.7	263.7
Real	100.0	99.6	100.3	102.2	112.7	120.6	133.3	124.0	115.4	118.0	125.7	133.6	121.4	106.9	93.6

this risk increases, the demand for public programs and private health insurance also rises. Moreover, tax subsidies for health insurance premiums add to this increased demand, by encouraging the purchase of extra insurance. As the coinsurance rate (proportion paid out-of-pocket by consumers) declines with the additional insurance, both consumers and providers increasingly tend to treat health care services as a free good at the time of purchase. The ensuing increased demand for medical care interacts with our fee-for-service and retrospective cost-based reimbursement systems to further increase costs. That is, more services and more costly services reward providers with additional revenues from third-party payors. The reimbursement policy provides an incentive for providers to adopt product-innovative technologies, which increase costs. There is relatively less incentive to adopt process-innovative technologies, which are associated with increased productivity and decreased costs.

Our current institutional arrangement of third-party payments, with fee-for-service and retrospective cost-based reimbursement, has evolved out of a pragmatic and cooperative interaction among providers, third party payors, and consumers, based on their economic, social, and political needs and demands. Until an alternative institutional arrangement is devised that better meets the often conflicting needs and demands placed on the current system, the affected parties will probably resist significant changes to the current arrangement.

Assuming that the current incentive mechanisms and constraints affecting the demand for and supply of med-

ical care are not significantly modified,¹⁸ and that the projected overall inflation rates are accurate, the projections of health expenditures presented in this paper are a reasonable approximation of what can be expected for the next decade.

¹⁸In addition to changes in government regulations, there appears to be no shortage of proposals to modify both the demand and supply incentives of our present system. See, for example, American Medical Association, 1978; Blumberg, 1979; *Business Week*, 1979a; Christianson and McClure, 1979; Enthoven, 1979; Enthoven 1980; Feldstein, 1971b; Feldstein, 1977b; Gabel and Redisch, 1979; Gifford and Anlyan, 1979; Havighurst and Hackbarth, 1979; Luft, 1978; McClure, 1978; McNerney, 1980; Mechanic, 1978; Moore, 1979; National Council on Health Planning and Development, 1980; U.S. Council on Wage and Price Stability, December, 1976; and Walsh and Egdahl, 1977.

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Technical Note

Definitions of Selected Variables and Data Sources Used to Project National Health Expenditures

Hospital Care: Community Hospital Inpatient

Expenditures	Net total revenues (patient and other) allocated to inpatient care. Data Source: American Hospital Association, "Hospital Indicators," <i>Hospitals</i> (National Hospital Panel Survey). Net total revenue per adjusted patient day is projected as a percentage mark-up over average expense per adjusted patient day.
Use	Inpatient days and admissions. Data Source: American Hospital Association, "Hospital Indicators," <i>Hospitals</i> (National Hospital Panel Survey).
Input Prices	National Hospital Input Price Index. Data Source: Mark S. Freeland, Gerard Anderson, and Carol Ellen Schendler, "National Hospital Input Price Index," <i>Health Care Financing Review</i> , Summer 1979, pp. 37-61. For current values of this index see Health Care Financing Administration, <i>Health Care Financing Trends</i> , various quarterly issues, beginning Fall 1979.
Real Expense per Day and per Admission	Average expense per adjusted patient day and expense per adjusted admission are deflated by the National Hospital Input Price Index.
Supply	Beds. Data Source: American Hospital Association, "Hospital Indicators," <i>Hospitals</i> (National Hospital Panel Survey).
Construction	See the last expenditure category listed in this Technical Note.
Comments	<p>Projected growth rates for community hospital inpatient expenses, admissions, and patient days are from the Board of Trustees, Federal Hospital Insurance Trust Fund, <i>1980 Annual Report of the Board of Trustees of the Federal Hospital Insurance Trust Fund</i>, Washington, D.C., June 17, 1980. Projected growth rates for 1980 and 1981 were modified by the Medicare actuaries to account for trends evident as of Fall 1980.</p> <p>The Consumer Price Index for Hospital Room and the Health Insurance Association of America's Semi-private Room Charge are also projected. Data Sources: Bureau of Labor Statistics, <i>CPI Detailed Report</i>, U.S. Department of Labor, various monthly issues. Health Insurance Association of America, <i>Survey of Hospital Semi-Private Room Charges as of January 1980</i>, New York, 1980.</p>

Hospital Care: Community Hospital Outpatient

Expenditures	Net total revenues (patient and other) allocated to outpatient care. Data Source: American Hospital Association, "Hospital Indicators," <i>Hospitals</i> (National Hospital Panel Survey). Net total revenue per outpatient visit is projected as a percentage mark-up over average expense per outpatient visit.
Use	Outpatient visits. Data Source: American Hospital Association, "Hospital Indicators," <i>Hospitals</i> (National Hospital Panel Survey).
Input Prices	National Hospital Input Price Index. Data Source: Mark S. Freeland, Gerard Anderson, and Carol Ellen Schendler, "National Hospital Input Price Index," <i>Health Care Financing Review</i> , Summer 1979, pp. 37-61. For current values of this index see Health Care Financing Administration, <i>Health Care Financing Trends</i> , various quarterly issues, beginning Fall 1979.
Real Expense per Outpatient Visit	Average expense per outpatient visit is deflated by the National Hospital Input Price Index.

Hospital Care: Federal Hospitals

Expenditures	Total expenditures for services provided by Department of Defense, Veteran's Administration, Public Health Service, and other Federal hospitals. Data Source: Data reported to the Office of Management and Budget by the various Federal agencies. Inpatient and outpatient expenditures are included in total expenditures.
Use	Inpatient days. Data Source: American Hospital Association, <i>Hospital Statistics, 1980 Edition, 1980</i> .
Input Prices	A national Federal Hospital Input Price Index was developed. Rates of change for payroll expense per fulltime equivalent Federal hospital employee were derived from data reported in the American Hospital Association, <i>Hospital Statistics, 1980 Edition, 1980</i> . Rates of change for the prices of inputs for nonpayroll expenses were derived from the National Hospital Input Price Index. See Mark S. Freeland, Gerard Anderson, and Carol Ellen Schendler, "National Hospital Input Price Index," <i>Health Care Financing Review, Summer 1979, pp. 37-61</i> .
Real Expense per Day	Average expense per patient day was deflated by the Federal Hospital Input Price Index.
Supply	Beds. Data Source: American Hospital Association, <i>Hospital Statistics, 1980 Edition, 1980</i> .
Construction	See the last expenditure category listed in this Technical Note.

Hospital Care: Other

Expenditures	This is a residual category that is primarily composed of non-Federal long-term care hospitals and non-Federal short-term psychiatric hospitals. It is derived by subtracting net total revenues for community hospitals and Federal hospital expenditures from total hospital care expenditures reported in Robert M. Gibson, "National Health Expenditures, 1979," <i>Health Care Financing Review, Summer 1980</i> .
Input Prices	National Hospital Input Price Index. Data Source: Mark S. Freeland, Gerard Anderson, and Carol Ellen Schendler, "National Hospital Input Price Index," <i>Health Care Financing Review, Summer 1979, pp. 37-61</i> . For current values of this index see Health Care Financing Administration, <i>Health Care Financing Trends, various quarterly issues, beginning Fall 1979</i> .
Real Expense per Capita	Per capita expenditures for "Hospital Care: Other" were deflated by the National Hospital Input Price Index.

Physicians' Services

Expenditures	Expenditures for the services of physicians are reported in Robert M. Gibson, "National Health Expenditures, 1979," <i>Health Care Financing Review, Summer 1980, pp. 1-36</i> .
Use	Physician visits. Data Sources: Total physician visits except visits to hospital inpatients are from the National Center for Health Statistics, <i>Current Estimates from the Health Interview Survey, U.S. Department of Health and Human Services, various annual issues</i> . The Health Interview Survey data omit physician visits to hospital inpatients. American Hospital Association data on inpatient days in community hospitals are used to provide an indicator of inpatient physician visits. See American Hospital Association, "Hospital Indicators," <i>Hospitals, (National Hospital Panel Survey)</i> .

Prices	Consumer Price Index for Physicians' Services. Data Source: Bureau of Labor Statistics, <i>CPI Detailed Report</i> , U.S. Department of Labor, various monthly issues.
Real Expense per Visit	Average revenue per physician visit is deflated by the CPI for Physicians' Services.
Supply	Active physicians (MDs and DOs), Active non-Federal office-based physicians (MDs and DOs), and Foreign Medical Graduates (FMGs). Data Sources: The primary data sources were various published and unpublished reports from the Division of Health Professions Analysis. Especially see Division of Health Professions Analysis, Bureau of Health Professions, <i>Supply of Manpower in Selected Health Occupations: 1950-1990</i> , Health Resources Administration, U.S. Department of Health and Human Services, August 1980; and Division of Health Professions Analysis, Bureau of Health Professions, "Projections of Active Physicians and Dentists, 1976-1990," Health Resources Administration, U.S. Department of Health and Human Services, October 14, 1980, unpublished. The number of active physicians, including FMGs, was projected by the Division of Health Professions. The Health Care Financing Administration projected the number of active non-Federal office-based physicians based on trends in historical relationships between total active physicians and non-Federal office-based physicians. Historical data on non-Federal office-based MDs are derived from various annual editions of the American Medical Association, <i>Physician Distribution and Medical Licensure in the U.S.</i> , Center for Health Services Research and Development, Monroe, Wisconsin.

Dentists' Services

Expenditures	Expenditures for services of dentists are reported in Robert M. Gibson, "National Health Expenditures, 1979" <i>Health Care Financing Review</i> , Summer 1980, pp. 1-36.
Use	Dental visits. Data Source: National Center for Health Statistics, <i>Current Estimates from the Health Interview Survey</i> , U.S. Department of Health and Human Services, various annual issues.
Prices	Consumer Price Index for Dental Services. Data Source: Bureau of Labor Statistics, <i>CPI Detailed Report</i> , U.S. Department of Labor, various monthly issues.
Real Expense per Visit	Average revenue per dental visit is deflated by the CPI for Dental Services.
Supply	Active dentists and active non-Federal office-based dentists. Data Sources: The primary data sources were various published and unpublished reports from the Division of Health Professions Analysis. Especially see Division of Health Professions Analysis, Bureau of Health Professions, <i>Supply of Manpower in Selected Health Occupations: 1950-1990</i> , Health Resources Administration, U.S. Department of Health and Human Services, August 1980; and Division of Health Professions Analysis, Bureau of Health Professions, "Projections of Active Physicians and Dentists, 1976-1990," Health Resources Administration, U.S. Department of Health and Human Services, October 14, 1980, unpublished. Also see Division of Manpower Analysis, Bureau of Health Manpower, <i>Dental Manpower Fact Book</i> , Health Resources Administration, U.S. Department of Health, Education, and Welfare, March 1979. The Division of Health Professions projected the number of active dentists. The Health Care Financing Administration projected the number of active non-Federal office-based dentists based on trends in historical relationships between total active dentists and non-Federal office-based dentists.

Other Professional Services

Expenditures	Expenditures for other professional services (for example, optometrists, podiatrists, chiropractors, private-duty nurses, and home-health agency services that are not hospital-based) are reported in Robert M. Gibson, "National Health Expenditures, 1979," <i>Health Care Financing Review</i> , Summer 1980, pp. 1-36.
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Prices	Consumer Price Index for Professional Services. Data Source: Bureau of Labor Statistics, <i>CPI Detailed Report</i> , U.S. Department of Labor, various monthly issues.
Real Expense <i>per Capita</i>	<i>Per capita</i> expenditures for other professional services were deflated by the CPI for Professional Services.

Drugs and Medical Sundries

Expenditures	Expenditures for drugs and medical sundries are reported in Robert M. Gibson, "National Health Expenditures, 1979," <i>Health Care Financing Review</i> , Summer 1980, pp. 1-36.
Prices	Consumer Price Index for Medical Care Commodities. Data Source: Bureau of Labor Statistics, <i>CPI Detailed Report</i> , U.S. Department of Labor, various monthly issues.
Real Expense <i>per Capita</i>	<i>Per capita</i> expenditures for drugs and medical sundries were deflated by the CPI for Medical Care Commodities.

Eyeglasses and Appliances

Expenditures	Expenditures for eyeglasses and appliances are reported in Robert M. Gibson, "National Health Expenditures, 1979" <i>Health Care Financing Review</i> , Summer 1980, pp. 1-36.
Prices	Consumer Price Index for Eyeglasses. Data Source: U.S. Bureau of Labor Statistics, <i>CPI Detailed Report</i> , U.S. Department of Labor, various monthly issues.
Real Expense <i>per Capita</i>	<i>Per capita</i> expenditures for eyeglasses and appliances were deflated by the CPI for Eyeglasses.

Nursing Home Care: Nursing Home Care Excluding ICF-MR (Intermediate Care Facilities in Institutions for the Mentally Retarded)

Expenditures	Total revenue data for nursing home care, excluding Medicaid covered intermediate care facility services in institutions for the mentally retarded, are derived by the Health Care Financing Administration from data on facilities, use, employment, costs, and revenues. Data sources used include: the National Center for Health Statistics' National Nursing Home Surveys; Internal Revenue Service statistical reports; National Center for Health Statistics' Master Facility Inventories; Health Care Financing Administration data on Medicaid and Medicare; Bureau of Labor Statistics' data for the nursing home industry; and Bureau of Census Surveys.
Use	Nursing home days are derived by the Health Care Financing Administration from data sources discussed above.
Input Prices	National Nursing Home Input Price Index. Data Source: Charles R. Fisher and Carol Ellen Schendler, "National Nursing Home Input Price Index," Division of National Cost Estimates, Office of Financial and Actuarial Analysis, Health Care Financing Administration, November 1980, unpublished. Current values of the index are reported in Health Care Financing Administration, <i>Health Care Financing Trends</i> , various quarterly issues beginning Fall 1979.
Real Expense per Day	Average revenue per day was deflated by the National Nursing Home Input Price Index.

Supply Data concerning nursing home beds are derived by the Health Care Financing Administration with data from the sources discussed above. No national data on expenditures for construction in the nursing home industry are available. These construction expenditures are included as part of total medical-facilities construction. See the last expenditure category listed in this Technical Note.

Nursing Home Care: ICF-MR

Expenditures Expenditures for Medicaid covered intermediate care facility services in institutions for the mentally retarded are reported in Medicaid Program Data Branch, Office of Research, Demonstrations, and Statistics, *National Medicaid Statistics*, Health Care Financing Administration, various fiscal years. Also see Medicaid/Medicare Management Institute, *Data on the Medicaid Program: Eligibility, Services, Expenditures*, Health Care Financing Administration, 1979.

Use Number of recipients of Medicaid covered ICF-MR. Data Source: Medicaid Program Data Branch, Office of Research, Demonstrations, and Statistics, *National Medicaid Statistics*, Health Care Financing Administration, various fiscal years. Also see Medicaid/Medicare Management Institute, *Data on the Medicaid Programs Eligibility, Services, Expenditures*, Health Care Financing Administration, 1979.

Input Prices National Nursing Home Input Price Index. Data Source: Charles R. Fisher and Carol Ellen Schendler, "National Nursing Home Input Price Index," Division of National Cost Estimates, Office of Financial and Actuarial Analysis, Health Care Financing Administration, November 1980, unpublished. Current values of the index are reported in Health Care Financing Administration, *Health Care Financing Trends*, various quarterly issues beginning Fall 1979.

Real Expense per Recipient Average expenditures per ICF-MR recipient are deflated by the National Nursing Home Input Price Index.

Comment Expenditures for total nursing home care (ICF-MR and nursing home care excluding ICF-MR) are reported in Robert M. Gibson, "National Health Expenditures, 1979," *Health Care Financing Review*, Summer 1980, pp. 1-36.

Other Health Services

Expenditures Expenditures for "Other Health Services" are reported in Robert M. Gibson, "National Health Expenditures, 1979," *Health Care Financing Review*, Summer 1980, pp. 1-36.

Prices Consumer Price Index for Medical Care. Data Source: U.S. Bureau of Labor Statistics, *CPI Detailed Report*, U.S. Department of Labor, various monthly issues.

Real Expense per Capita *Per capita* expenses for "Other Health Services" were deflated by the CPI for Medical Care.

Expenses for Prepayment and Administration

Expenditures Expenses for Prepayment and Administration are reported in Robert M. Gibson, "National Health Expenditures, 1979," *Health Care Financing Review*, Summer 1980, pp. 1-36.

Input Prices Average hourly earnings of employees in the "insurance carriers: medical service and health insurance" industry (1972 SIC Code 632). Data Source: Bureau of Labor Statistics, *Employment and Earnings*, U.S. Department of Labor, various monthly issues.

Deflated Expense per Capita	<i>Per capita</i> expenses for Prepayment and Administration were deflated by an index of average hourly earnings of employees in the "insurance carriers: medical service and health insurance" industry.
Comment	We used a different methodology to project expenses for Prepayment and Administration. Prepayment costs (including operating expenses) of private health insurance organizations were projected as a ratio of selected categories of personal health expenditures in accordance with historical relationships and trends. Since we are making trend, rather than cyclical, projections, the volatile cyclical component (additions to reserves and profits) was compressed for the near-term projection, and set at the average trend value for long-term projections. Administrative expenses for Medicare were projected as part of the 1980 Trustees Reports. The authors projected all other administrative expenses in accordance with historical trends and relationships.

Government Public Health Activities

Expenditures	Expenditures for government public health activities are reported in Robert M. Gibson, "National Health Expenditures, 1979," <i>Health Care Financing Review</i> , Summer 1980, pp. 1-36.
Input Prices	Wages and salaries per full-time equivalent employee in the civilian Federal government, and wages and salaries per full-time equivalent employee in State and local government (excluding workers in education and government enterprise). Data Source: Bureau of Economic Analysis, <i>Survey of Current Business</i> , U.S. Department of Commerce, various July issues.
Deflated Expense per Capita	<i>Per capita</i> expenses for government public health activities were deflated by an index which is a weighted average of wages and salaries per full-time equivalent employee in civilian Federal government and "other" State and local government.

Research

Expenditures	Expenditures for medical research are reported in Robert M. Gibson, "National Health Expenditures, 1979," <i>Health Care Financing Review</i> , Summer 1980, pp. 1-36.
Prices	Biomedical Research and Development Price Index. Data Source: National Institutes of Health, Public Health Service, <i>Basic Data Relating to the National Institutes of Health</i> , U.S. Department of Health, Education, and Welfare, March 1980. Also see National Institutes of Health, Public Health Service; <i>Dollars for Health Research and Development: 1968-1975</i> , Resources for Health R&D Report No. 23, U.S. Department of Health, Education, and Welfare, June 1977.
Real Expense per Capita	<i>Per capita</i> expenses for medical research are deflated by the Biomedical Research and Development Price Index.

Construction

Expenditures	Expenditures for medical-facilities construction are reported in Robert M. Gibson, "National Health Expenditures, 1979," <i>Health Care Financing Review</i> , Summer 1980, pp. 1-36.
Prices	There are two implicit price deflators for this category—one for purchases of structures "private, new, nonresidential—religious, educational, hospital, institutional, and other," and one for purchases of structures "government, new, buildings excluding military—industrial, educational, hospital and other." Data Source: Bureau of Economic Analysis, <i>Survey of Current Business</i> , U.S. Department of Commerce, various July issues.

Real Expenditures per Bed

Medical-facilities construction expenditures per bed were deflated by a weighted average of implicit price deflators for construction of private and public nonresidential structures. A weighted average of community hospital, Federal hospital, and nursing home beds was used as the divisor to calculate real construction expenditures per bed.

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